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THE BLOOD DYSCRASIAS FOLLOWING THE ARSPHENAMINES

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AND
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BOSTON

In spite of its comparative rarity, the sudden appearance of hemorrhagic purpura during the course of the arsenical treatment of syphilis has attracted considerable attention during recent years. Although the arsphenamines were first introduced into general use in 1910, it was not until nine years later that Labbé and Langlois [1] drew attention to this one of its toxic manifestations. A few cases reported prior to 1919 without doubt fall into the general group of blood dyscrasias, but at the time they were not specifically identified as being due to the arsphenamines. A careful search of the literature shows that only seventy-nine cases have been recorded, not only those with the clinical syndrome of hemorrhagic purpura but including all the blood dyscrasias; this probably does not represent the total, as a few cases may have escaped observation and many undoubtedly have not been reported. The rarity of the condition is further indicated by the recently published statistics of Cole and his co-workers,[2] who observed only two cases of purpura hemorrhagica in a total of 338 complications, their series including 78,350 injections of the various arsenicals in 1,212 patients over a ten year period. While a number of attempts at the classification and explanation of these blood dyscrasias have been made, not one is entirely satisfactory. We have therefore tried to analyze all available material, adding two new case reports, and present a somewhat modified classification, which we feel offers more prognostic information and at the same time throws some new light on the underlying toxicology of one of the types of this group of conditions.

REPORT OF CASES

CASE 1.—C. B., a white laborer, aged 49, first sought medical advice in September, 1929, because of anginal pain. As the blood Wassermann reaction was positive and the physical examination pointed to syphilitic heart disease, antisyphilitic treatment was begun, but during the following seven months the patient received only three injections of a bismuth compound. At this time he came to the Boston City Hospital with the same complaint. The heart was enlarged and there was a harsh systolic murmur over the aortic area. The urine was normal, the blood picture normal. Lumbar puncture was negative. The blood Wassermann and Kahn reactions were positive; the patient was started on potassium iodide and referred to the outpatient department for subsequent treatment.

From May 3 to Sept. 9, 1930, he was given a total of eighteen injections of neoarsphenamine, each 0.3 Gm. Mild jaundice and exfoliative dermatitis developed, and antisyphilitic treatment was discontinued until this had subsided. December 6, treatment was resumed, and from this time until Oct. 29, 1931, thirty-two injections of a bismuth compound were administered. November 5, neoarsphenamine, 0.3 Gm., was given without reaction. One week later, 0.45 Gm. of the same drug was given. On reporting to the clinic the following week, the patient stated that he had had some bleeding from the gums, beginning three hours after the last injection and persisting for one day; nevertheless, a third injection of neoarsphenamine, 0.3 Gm., was tried, followed immediately by collapse, cyanosis, vomiting and, in a few minutes, considerable bleeding from the gums. At no time was consciousness completely lost, but the patient was in moderately severe shock and was more or less apathetic. He was admitted to the hospital, where the following additional conditions were elicited on physical examination: temperature, 102 F.; pulse weak and barely perceptible, 120 per minute; a cold sweat on the face and extremities; breath foul, and persistent bleeding from the gums and oral mucosa; slight epistaxis; posterior cervical and inguinal glandular enlargement; moderate enlargement of the heart to the left and a loud, harsh systolic murmur heard all over the precordium. The skin was entirely clear. Treatment for shock was instituted and by the next morning there was considerable improvement in the patient's condition. The temperature had dropped to normal; the pulse was slow and forceful, but there was still some slight oozing from the gums which persisted until late in the day, for about thirty-six hours after the injection of the drug. For the first time the skin showed many small petechial purpuric spots, in great numbers over the upper and lower extremities and a few on the abdomen. There was also one large ecchymotic spot on the right shoulder, although there had been no local injury. From this time on improvement was gradual but progressive. No new purpuric spots developed and there was no further bleeding from any of the mucous surfaces after the initial bleeding had ceased. The patient's general condition improved considerably with prolonged rest, and he was discharged from the hospital after one month, for further observation in the outpatient department.

November 19, the day of admission, the blood count showed: hemoglobin, 75 per cent; red blood cells, 4,500,000; white blood cells, 7,000; the differential smear showed: polymorphonuclears, 67 per cent; lymphocytes, 27 per cent; mononuclears, 1 per cent; eosinophils, 5 per cent. There were practically no platelets to be found on the smear. The next day a few platelets were seen on the smear but they were still relatively rare. The coagulation time was five minutes and there was no retraction of the clot. Two days later the bleeding time was ten minutes; the coagulation time was three minutes, and there was slight retraction of the clot in two hours. November 27, blood count showed: hemoglobin, 75 per cent; red blood corpuscles, 3,980,000; white blood corpuscles, 5,900. A great many platelets were to be seen in the smear. The coagulation time was four minutes, with good retraction of the clot in two hours. December 2, another blood count showed: hemoglobin, 81 per cent; red blood cells, 4,160,000; white blood cells, 9,800; the differential count gave: polymorphonuclears, 72 per cent; lymphocytes, 22 per cent; mononuclears, 1 per cent; eosinophils, 4 per

From the Department of Dermatology and Syphilology, the Boston City Hospital.

1. As cited in table 4.
2. Cole, H. N.; DeWolf, Henry; McCuskey, J. M.; Miskjian, H. G.; Williamson, G. S.; Rauschkolb, J. R.; Ruch, R. O., and Clark, Taliaferro: Toxic Effects Following Use of the Arsphenamines, J. A. M. A. 97: 897 (Sept. 26) 1931.

cent; basophils, 1 per cent. Platelets were abundant on the smear. The bleeding time on this date was five and one-half minutes, the clotting time three minutes, with slight retraction of the clot in one hour and good retraction in two hours. Additional laboratory examinations showed the urine normal on several examinations; the 7-foot roentgenogram of the chest showed the heart to be enlarged in the region of the left ventricle; the electrocardiogram showed changes characteristic of coronary involvement.

CASE 2.—A. S., a white man, aged 29, contracted a primary lesion of the upper lip in June, 1930, which remained undiagnosed until the development of a secondary eruption a month later. The Wassermann reaction was positive and the patient showed marked constitutional symptoms, with fever and considerable prostration in addition to the skin lesions. Antisyphilitic therapy was begun, and between July 4 and August 6 the patient received ten injections of neoarsphenamine, each 0.3 Gm. Following the third injection, a mild jaundice had developed, but treatment was continued and the jaundice gradually subsided. The Wassermann reaction was negative following the last injection but one month later, during which time no treatment was given, it had become positive and a second course of injections was begun. This series consisted of ten further injections of neoarsphenamine, each of 0.45 Gm. and all well tolerated, without any signs of reaction. The Wassermann reaction again became negative and between January and April, 1931, twelve injections of bismuth salicylate were administered.

At this time a third course of neoarsphenamine was started; two doses, each 0.45 Gm., were given with no ill effects. One hour following the third injection of the same amount of the drug the patient suddenly began to bleed from the gums, and a short time later a profuse generalized purpuric eruption made its appearance. This was particularly prominent on the lower extremities, with spots varying from pinpoint in size to ecchymotic areas from 2 to 3 cm. in diameter. The oral mucous membrane likewise showed considerable involvement, and there were many small bleeding points on the gingival margins. A blood count at this time showed: red blood cells, 4,500,000; white blood cells, 6,200, with 44 per cent polymorphonuclears; the smear showed that there was a marked reduction in the number of platelets.

Treatment was begun immediately with calcium chloride, 10 cc. by vein, followed by 1 Gm. of sodium thiosulphate, and the latter was repeated every day for one week. Bleeding from the gums promptly ceased, and no new purpuric spots made their appearance after the initial outbreak, which had faded completely within one week. One day after the accident, the blood picture was normal. No antisyphilitic treatment was given for the following three months, when the Wassermann reaction had again become positive and bismuth therapy was resumed. In August, 1931, with the patient's permission, another injection of neoarsphenamine was tried, 0.1 Gm., which was followed in half an hour by a slight chill and the prompt appearance of purpura, similar in distribution and intensity to that of the previous attack, and associated with moderate bleeding from the gums. No treatment was instituted; the bleeding ceased entirely in a short time, and within a week the purpuric eruption had likewise cleared.

TABLE 1.—*Thrombocytopenic Group*

Case	Reference	Drug	Doses	Intervals	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent	Platelets	Result
1	O'Leary, P. A., and Connor, H. M.: Acute Purpura Hemorrhagica as a Complication in the Treatment of Syphilis, Am. J. Syph. **9**: 262 (April) 1925	Neoarsphenamine Sulpharsphenamine	8 29	3 hours	Moderate anemia	7,300	88	44,000	Recovered
2	O'Leary and Connor, as above.....	Arsphenamine Neoarsphenamine Sulpharsphenamine Tryparsamide Sulpharsphenamine	6 10 7 16 3	3 hours	Moderate anemia	4,300	60	80,000	Recovered
3	Smith, C. M.: Severe Bleeding and Purpura Following the Administration of Neoarsphenamine, Arch. Dermat. & Syph. **11**: 237 (Feb.) 1925	Neoarsphenamine	24	Immediately	.....	.....	..	.....	Recovered
4	Day, L. W.: Acute Purpura Hemorrhagica Following the Administration of Sulpharsphenamine, with Recovery, U. S. Vet. Bur. M. Bull. **6**: 62 (Jan.) 1930	Arsphenamine Sulpharsphenamine	6 18	4 days	3,760,000	26,300	80	Low	Recovered
5	Lindsay, J. W.; Rice, E. C., and Selinger, M. A.: Purpura Hemorrhagica Following Neoarsphenamine, South. M. J. **23**: 715 (Aug.) 1930	Neoarsphenamine Sulpharsphenamine Neoarsphenamine	9 6 3	Immediately	.....	.....	..	.....	Recovered
6	Bamforth, J., and Elkington, J. St. G.: Arsenobenzol Purpura, Quart. J. Med. **24**: 381 (April) 1931	Sulpharsphenamine	18	5 days	Normal	5,600	60	42,000	Recovered
7	Farley, D. L.: Depressed Bone-Marrow Function from the Arsphenamines, Am. J. M. Sc. **179**: 214 (Feb.) 1930	Neoarsphenamine	9+	1 hour	.....	.....	..	.....	Recovered
8	Florand, A.; Nicaud, P., and Froment, P.: Hemorrhagic and Purpuric Syndrome in the Course of the Arsenical Treatment of Syphilis in a Hemogenic Subject, Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 1266 (July 28) 1922	Neoarsphenamine Arsphenamine Sulpharsphenamine Neoarsphenamine	5 12 9 7	4 hours	2,480,000	4,000	..	40,000	Recovered
9	Lespinne and Wydooghe: Study of Two Cases of Purpura Hemorrhagica from Injections of the Arsphenamines, Ann. d. mal. vén. **17**: 241 (April) 1922	Sulpharsphenamine	12	3 days	3,240,000	15,600	80	89,000	Recovered
10	Jensen, Julius: Purpura Hemorrhagica Following Neoarsphenamine, Minnesota Med. **12**: 689 (Nov.) 1929	Neoarsphenamine	5	Few days	2,560,000	6,300	70	50,000	Recovered
11	Thill, Otto: Hemorrhagic Purpura Resulting from the Therapeutic Administration of Myoarsphenamine, Ztschr. f. klin. Med. **109**: 285 1928	Neoarsphenamine	22	1 day	4,800,000	5,800	78	Low	Recovered
12	McCarthy and Wilson.....	Neoarsphenamine	21	Immediately	4,500,000	7,000	67	Low	Recovered

COMMENT

These two cases represent very similar reactions. Neoarsphenamine was the drug used in each case, and in neither did symptoms appear until after a considerable number of injections had been given. Purpura and external hemorrhage were the clinical features of both, appearing almost immediately after the final injection of the arsenical, and an identical reaction developed after one further injection. Thrombocytopenia was the outstanding laboratory finding. Prompt recovery took place in both instances.

CLASSIFICATION

The classification of the blood dyscrasias following the therapeutic administration of arsenicals presents a rather complex picture. Farley [3] believes that all

3. As cited in table 1.

are manifestations of varying degrees of depressed bone-marrow function. Kennedy [4] suggests three groups: (1) purpura without hemorrhage, (2) purpura with hemorrhage and (3) aplastic anemia with hemorrhagic diathesis. Dodd and Wilkinson [5] add another group, the agranulocytic cases. From an analysis of all the cases that can be found reported in the literature, it would seem that there are three main divisions into which such cases can be classified: (1) thrombocytopenic, (2) granulocytopenic and agranulocytic and (3) aplastic. In addition, there are a few cases with entirely atypical manifestations which defy classification and will be discussed separately. On this basis, all the cases found have been tabulated and conclusions drawn as to the prognosis and indicated therapy in each group. Into the first group have been placed those cases which show no evidence of depressed bone-marrow function, the essential feature being a rather marked acute thrombocytopenia, with purpura and external hemorrhages. The second group, the granulocytopenic, includes those cases which are characterized by depression of the granulocytic white cell elements, the red cells and platelets being relatively free of changes. The third large group, the aplastic, comprises those cases in which all the cellular elements of the blood stream have been affected to some extent.

TABLE 2.—*Thrombocytopenia and Granulocytopenia* *

Case	Reference	Drug	Doses	Intervals	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent	Platelets	Result
1	Leredde: Concerning Some Benign, Grave and Fatal Accidents Due to Arsphenamine, Rev. gén. d. clin. et de thérap. **33**: 33, 1919	Neoarsphenamine	16	2 hours	2,600,000	3,000	47	Low	Recovered
2	Gorke, H.: Development of Aplastic Anemia After Arsphenamine, München. med. Wchnschr. **67**: 1226 (Oct. 22) 1920	Silver arsphenamine	10	3 days	3,500,000	2,600	46	36,000	Recovered
3	McCarthy and Wilson	Neoarsphenamine	23	1 hour	4,500,000	6,200	44	Low	Recovered
4	Kennedy, W. R.: Occurrence of Blood Dyscrasias Following the Administration of Neoarsphenamin, Canad. M. A. J. **19**: 439 (Oct.) 1928	Neoarsphenamine	17	1 hour	3,800,000	5,200	42	45,000	Recovered
5	Lespinne and Wydooghe, as cited in table 1	Sulpharsphenamine	27	2 days	.....	3,500	7	.....	Recovered
6	Nicolas, J., Gaté, J., and Leboeuf, F.: Acute Purpura Hemorrhagica After Novarsphenamine, Ann. d. dermat. & syph. **4**: 705, 1923	Neoarsphenamine	8	11 days	3,410,000	1,500	5	24,000	Died
7	Appel, Bernard: Agranulocytic-Purpuric-Hemorrhagic Reaction After Neoarsphenamine, Urol. & Cutan. Rev. **34**: 100 (Feb.) 1930	Neoarsphenamine	39	6 days	3,400,000 1,800,000 3,280,000	3,000 2,000 5,700	4 8 42	38,000 212,000	Recovered

* Seven such cases, showing varying degrees of bone-marrow depression in addition to acute purpura hemorrhagica. One death, mortality, 14 per cent.

TABLE 3.—*Agranulocytosis and Agranulocytopenia* *

Case	Reference	Drug	Doses	Intervals	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent	Platelets	Result
1	Dodd, Katharine, and Wilkinson, S. J.: Severe Granulocytic Aplasia of the Bone-Marrow, J. A. M. A. **90**: 663 (March 3) 1928	Sulpharsphenamine	4	Immediately	Slight anemia	136	0	Low	Died
2	Appel, as cited in table 2	Sulpharsphenamine Neoarsphenamine	1 4	4 days	3,680,000	1,150	0	Normal	Died
3	Pouzin-Malègue (Mme.): A Case of Agranulocytosis Following Arsphenamine, Bull. et mém. Soc. méd. d. hôp. de Paris **52**: 1786 (Dec. 14) 1928	Neoarsphenamine	6	3 days	3,500,000	3,500	0	.....	Died
4	Farley, as cited in table 1	Neoarsphenamine	6	4 days	3,900,000	3,600 1,100	26 0	.....	Died
5	Farley, as cited in table 1	Neoarsphenamine	3	13 days	3,300,000	4,200	0	.....	Recovered
6	Moore, J. E., & Foley, F. E.: Serious Reactions from the Salvarsan and Diarsenol Brands of Arsphenamine, Arch. Dermat. & Syph. **1**: 25 (Jan.) 1920	Arsphenamine	4	7 days	.....	2,800	0	.....	Recovered
7	Evans, F. A.: Observations on the Origin and Status of the So-Called Transitional White Blood Cell, Arch. Int. Med. **17**: 1 (Jan.) 1916	Arsphenamine	2	.....	.....	6,700	7	.....	Recovered
8	Foster, J. M., Jr.: Agranulocytic Angina Following the Administration of Neoarsphenamine; Report of a Case with Recovery Following the Use of Sodium Thiosulphate, Colorado Med. **27**: 388 (April) 1930	Neoarsphenamine	7	16 hours	4,700,000	2,200	10	340,000	Recovered
9	Moore and Foley, as above	Arsphenamine	5	.....	4,600,000	3,840	10	.....	Recovered
10	Farley, as cited in table 1	Neoarsphenamine	12	7 days	4,450,000	4,100	30	.....	Recovered
11	Moore and Foley, as above	Arsphenamine	2	7 days	4,170,000	7,000	34	.....	Recovered
12	Dodd and Wilkinson, as above	Neoarsphenamine Sulpharsphenamine	2 1	Immediately	Slight anemia	4,400	65	180,000	Recovered

* Twelve cases, four deaths; a mortality of 33 per cent.

In the thrombocytopenic group (table 1) twelve cases are classified, including the first case reported by the authors herein. All recovered, and all have certain characteristics in common. Purpura and external hemorrhages were the symptoms in every case, developing acutely as a rule; the interval between the final injection of the drug and the appearance of symptoms was prolonged in four cases, but never beyond five days, while in eight of the cases symptoms appeared immediately or within a few hours. In five cases the

4. As cited in table 2.
5. Dodd and Wilkinson, as cited in table 3.

TABLE 4.—*Aplastic Anemia* *

Case	Reference	Drug	Doses	Intervals	Red Blood Cells	White Blood Cells	Polymorphonuclears, per Cent	Platelets	Result
1	Roberts, L. J.: Aplastic Anemia Following Arsphenamine Therapy; Report of Case, U. S. Nav. M. Bull. **29**: 441 (July) 1931	Neoarsphenamine	22	4-6 weeks	1,000,000	2,830	36	260,000	Recovered
2	Weil, P. E., and Isch-Wall, P.: Grave Anemia from Sulpharsphenamine, Bull. et mém. Soc. méd. d. hôp. de Paris **51**: 319 (March 17) 1927	Sulpharsphenamine	18	1 month	1,620,000	3,630	15	Low	Recovered
3	Widal and Bertrand-Fontaine: Grave Aplastic Anemia Associated with Purpura Following Neoarsphenamine, Bull. et mém. Soc. méd. d. hôp. de Paris **50**: 980 (June 11) 1926	Neoarsphenamine	18+	13 days	1,120,000	1,600	8	Low	Recovered
4	Louste, Ducourtioux and Lotte: Purpura Following Sulpharsphenamine, Bull. Soc. franç. de dermat. et syph. **33**: 636 (Nov.) 1926. Louste, Cahen and Van Bockstael: Hemorrhage from the Uterine Mucosa After Arsphenamine, ibid. **34**: 404 (June) 1927	Sulpharsphenamine	40	2 hours	1,610,000	6,800	..	.....	Recovered
5	Gaté, J., and Rousset, J.: Grave Hemorrhage Following Neoarsphenamine, Bull. et mém. Soc. méd. d. hôp. de Paris **53**: 293, 1929	Neoarsphenamine	15	10 hours	1,200,000	.....	Low	Low	Recovered
6	Gaté and Rousset, as above.....	Neoarsphenamine	14	12 days	1,200,000	7,500	49	Low	Recovered
7	Chattelier, L.: Fatal Purpura from Poisoning by Arsphenamine, Bull. Soc. franç. de dermat. et syph. **30**: 51, 1923	Neoarsphenamine	10	12 days	1,800,000	4,000	Low	Low	Died
8	Combes, F. C., Jr.; Purpura Hemorrhagica Following Sulpharsphenamine, Arch. Dermat. & Syph. **15**: 194 (Feb.) 1927	Arsphenamine Sulpharsphenamine	8 7	21 days	1,850,000	1,900 500	16 0	175,000	Died
9	Feinberg, S. M.: Aplastic Anemia Following Neoarsphenamine, J. A. M. A. **78**: 888 (March 25) 1922	Neoarsphenamine	26	13 days	880,000	1,600	30	Low	Died
10	Kastlin, G. J.: Agranulocytic Angina, Am. J. M. Sc. **173**: 799 (June) 1927	Neoarsphenamine	6	7 days	Moderate anemia	520	6	.....	Died
11	Moore, J. E., and Keidel, Albert: Stomatitis and Aplastic Anemia Due to Neoarsphenamine, Arch. Dermat. & Syph. **4**: 169 (Aug.) 1921	Arsphenamine Neoarsphenamine	2 9	7 days	3,000,000	1,100 550	4	48,000 28,000	Died
12	Labbé, M., and Langlois, S.: Acute Purpura Hemorrhagica from Arsenical Poisoning, Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 786 (July 25) 1919	Neoarsphenamine	16	2 hours	1,610,000	4,650	30	.....	Died
13	Gorke, as cited in table 2.....	Neoarsphenamine	12	18 days	1,400,000	2,500 600	20 12	22,000 11,000	Died
14	Gorke, as cited in table 2.....	.....	..	8 days	1,250,000	1,200	Low	Low	Died
15	Moore and Foley, as cited in table 3.....	Arsphenamine	8	1 day	Hb. 52%	2,400 600	31 0.5	..... Low	Died
16	Rabut, R., and Oury, P.: Purpura in the Course of Poisoning by Neoarsphenamine, Presse méd. **30**: 810 (Sept. 20) 1922	Neoarsphenamine	18	1 day	2,500,000	1,000	51	50,000	Died
17	Rabut and Oury, as above.....	Neoarsphenamine	12	1 day	1,800,000	1,200	55	60,000	Died
18	Bamforth and Elkington, as cited in table 1....	Neoarsphenamine Sulpharsphenamine	6 4	4 days	1,450,000	2,000	0	180,000	Died
19	Bamforth and Elkington, as cited in table 1....	Neoarsphenamine	12	12 days	1,810,000	1,700	0	Low	Died
20	Farley, as cited in table 1.....	Neoarsphenamine	6	4 months	560,000	2,800	12	89,000	Died
21	Videl, M.; Giraud, M., and Giraud, M. G.: Pernicious Aplastic Anemia after Arsphenamine with Purpura and Hemorrhages, Ann. d. dermat. et syph. **6**: 712, 1923	Neoarsphenamine	24	6 weeks	1,320,000	3,000	29	Low	Died
22	Stephens, D. J.: Aplastic Anemia Occurring During the Treatment of Syphilis with the Arsphenamines, Am. J. Syph. **15**: 333 (July) 1931	Arsphenamine Sulpharsphenamine	14 25	1 month	1,360,000	3,300 700	26 4	Low	Died
23	Stephens, as above.....	Arsphenamine	24	10 days	1,900,000	990	15	Low	Died
24	Aubertin, C.: Purpura, Aplastic Anemia and Agranulocytosis Following Arsphenamine, Monde méd. Paris **36**: 885 (Nov. 15) 1926	Neoarsphenamine	+++	3 weeks	1,090,000	3,300	30	Low	Died
25	Ugriumow, B., and Idelsohn, J.: Aplastic Anemia, Deutsches Arch. f. klin. Med. **157**: 257, 1927	Neoarsphenamine Silver arsphenamine Neoarsphenamine	3 1 1	4 days	1,250,000	600	10	Low	Died
26	Jacquelin, Célice and Langlois: A Case of Agranulocytosis Following Arsphenamine, Bull. et mém. Soc. méd d. hôp. de Paris **53**: 8 (Jan. 21) 1929	Neoarsphenamine	16	.....	1,100,000	1,600 400	15 10	Low	Died
27	Deroide, J.: Pernicious Anemia after Arsphenamine, Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 1460 (Nov. 10) 1922	Neoarsphenamine	44	2 months	Hb. 30%	.....	..	.....	Died
28	Pogány, E.: Aleukemia after Arsphenamine Treatment, Ztschr. f. Hals-, Nazen- u. Ohrenh. **18**: 583, 1927-1928	.....	..	.....	2,160,000 960,000	1,700 1,500	32 26	200,000	Died
29	Citron, J., and Hirschfeld, H.: Hemorrhagic Diathesis and Aplastic Anemia after Treatment for Syphilis, Med. Klin. **21**: 805 (May 29) 1925	Arsphenamine	..	2 months	2,000,000 600,000	4,210 2,500	27 20	Low	Died
30	Bocage, A., and Filliol, L.: Agranulocytic Angina and Purpura Hemorrhagica During the Course of Antisyphilitic Treatment, Bull. et mém. Soc. méd. d. hôp. de Paris **52**:1807 (Jan. 3) 1928	Neoarsphenamine	9	2 days	2,270,000	1,500	18	10,000	Died
31	Black, Noble: Unusual Reaction Following the Arsenical Treatment of Syphilis, Canad. M. A. J. **22**: 673 (May) 1930	Neoarsphenamine	5	8 days	1,170,000	2,000 1,800	20 0	Low	Died
32	Stuart	Arsphenamine	2	Few hours	.....	.....	..	.....	Died
33	Buist, T. P.: A Case of Fatal Hemorrhagic Purpura Following the Administration of Sulpharsphenamine, J. Roy. Army M. Corps **45**: 299, 1925	Sulpharsphenamine	13	1 hour	.....	.....	..	.....	Died
34	Leredde, as cited in table 2.....	Neoarsphenamine	33	12 hours	.....	.....	..	.....	Died

* Thirty-four patients, of whom only six recovered, a mortality of 83 per cent.

last drug to be used was sulpharsphenamine, while the remaining seven cases may be attributed to neoarsphenamine. The average number of injections in the patients of this group was twenty-three; in only one case, that reported by Jensen,[3] was a small amount of the drug used, following the fifth injection in this instance. In no case was there more than a moderate anemia, which could be accounted for in each by the extent of the blood loss, and in none was there any evidence of but the slightest degree of depressed bone-marrow function. Two cases reported by Evrard[6] probably also belong with this group but are not included in the table because of insufficient data; both developed within a few hours after the fourth and final injection of the drug (neoarsphenamine); both were characterized clinically by purpura and external bleeding, and both patients recovered.

In addition to the typical thrombocytopenic cases, there are a few which clinically fall into this group but are excluded because of varying degrees of granulocytopenia. Seven such cases are therefore placed in a subgroup (table 2). In all of these there was a rather marked and usually acute reduction in the number of platelets in the peripheral circulation, and all were characterized by bleeding and purpura. In only one case, that reported by Appel,[4] was there any considerable reduction in the red cell count, and here the anemia was probably due to continued bleeding. In all cases, however, there was a leukopenia and a reduction in the number of neutrophylic granulocytes, which in the only fatal case in this group reached a low level of 5 per cent.

Twelve cases are classified in the granulocytopenic group (table 3), of which four were fatal, a mortality of 33 per cent. Ten of the patients of this group had fever, seven had the pharyngeal signs of a necrotic angina, two were jaundiced and two had an exfoliative dermatitis. In all four of the fatal cases, both fever and necrotic angina were present. The drug used was arsphenamine in four cases, neoarsphenamine in five, sulpharsphenamine in one case, and both neoarsphenamine and sulpharsphenamine in two cases. The average number of injections given was only five, with two injections in one case and twelve in another. The interval between the final injection of the drug and the appearance of symptoms was as a rule fairly short, being immediate in two cases, while in only one case was it as long as thirteen days. In no case was there more than a moderate anemia. The white cell count was usually low. The percentage of neutrophilic granulocytes was reduced to a varying degree; in six of the twelve cases, including the four fatalities, there was a complete agranulocytosis, and in three others it reached a low level of 10 per cent. In only one case was a low platelet count recorded, and here there was no other clinical evidence of thrombocytopenia.

The aplastic group (table 4) comprises thirty-one definite cases and three others which would probably fall into the group had sufficient evidence been obtained from the blood picture. Of the thirty-four patients only six recovered, a mortality of 83 per cent. The drug used was neoarsphenamine in twenty-two instances, sulpharsphenamine in five, both of these drugs in one case and arsphenamine in four; in two cases the drug is not specified. The average number of injections was least when arsphenamine was used and greatest in the cases following sulpharsphenamine; in all cases the tendency was for a rather large number of injections to have been given before the appearance of symptoms. The interval between the final dose of the drug and the first symptom noted by the patient was subject to considerable variation; only one day or less had elapsed in eight cases, more than a month in seven, while the greater number fell between these extremes. The total red cell count was constantly reduced, usually below two million. Leukopenia was likewise a constant finding, with a reduction in the percentage of neutrophilic granulocytes in all cases and complete agranulocytosis in at least four cases. In most cases the number of platelets was also quite low.

The clinical manifestations in the entire group were much the same. Purpura was present in thirty of the thirty-four cases; bleeding occurred from one of the mucous surfaces in thirty-one cases. Extreme pallor without external bleeding or purpura was noted twice; dermatitis without bleeding or purpura was noted in one case. Epistaxis was fairly common and was the first symptom noted in three cases, followed in each instance by hemorrhagic purpura. Death was never immediate, the shortest interval after the appearance of symptoms being one week, and in many cases was only after a considerable period. When recovery took place, it was likewise delayed.

A few additional cases remain for consideration. Although it has been stated by a number of authors that simple purpura is one of the toxic manifestations of arsenical therapy, only two such cases can be found, and it is highly probable that in each of these there was a transitory thrombocytopenia responsible for the purpuric outbreak. The cases reported by Anwyl-Davies[7] and Maderna[8] fall into this group, if there is such a group; in neither was there any evidence of depressed bone-marrow function, and all made prompt recoveries. The case reported by Bamforth and Elkington[3] of a woman aged 28, in whom purpura, epistaxis and bleeding from the gums appeared ten hours after the twenty-fifth of a series of injections of sulpharsphenamine, is probably one of acute thrombocytopenia, although an unusually low platelet count is not recorded and persistent hemorrhage was relieved only by repeated transfusions. Callomon[9] also reports a case featured by bleeding and purpura, which appeared three days after the second injection of neoarsphenamine; his patient died within a short time of pulmonary hemorrhage, a complication found in no other instance in this series. Eschbach[10] and Louste[1] each have reported cases of bleeding from the uterus, associated with epistaxis and bleeding gums, following neoarsphenamine, in which there was apparently no thrombocytopenia or other changes in the blood picture. Guth[11] has reported a case characterized by purpura and bleeding, without evidence of depressed bone-marrow functions. This case, also, probably belongs in the thrombocytopenic group, although the platelet count does not seem to show it. Kraemer's[12] case

6. Evrard: Two Grave Hemorrhagic Accidents Following Arsphenamine, Ann. d. mal. vén. **19**: 97 (Feb.) 1924.

7. Anwyl-Davies, T.: Purpura Hemorrhagica Following the Therapeutic Administration of Neosalvarsan, Brit. J. Dermat. & Syph. **33**: 264 (July) 1921.

8. Maderna, Candido: Purpura Hemorrhagica Following Arsphenamine, Riforma med. **43**: 704 (July 25) 1927.

9. Callomon, F.: Purpura Hemorrhagica with Hematuria and Fatal Pulmonary Hemorrhage After Neoarsphenamine, Dermat. Wchnschr. **75**: 1197 (Dec.) 1922.

10. Eschbach, H.: Contribution to the Rôle of Neoarsphenamine in Jaundice Among Syphilitic Patients and in Blood Dyscrasias, Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 1120 (Dec. 19) 1919.

11. Guth, Arthur: Hemorrhages Resulting from the Therapeutic Administration of Arsphenamine, Schweiz. med. Wchnschr. **58**: 1289 (Dec. 29) 1928.

12. Kraemer, W. H.: Purpura as an Untoward Effect of Arsphenamine, Therap. Gaz. **42**: 466 (July) 1926.

following arsphenamine was probably one of an acute thrombocytopenia, although the bleeding in this case continued for some time and was controlled only after two transfusions and local applications. One of Leredde's [4] cases was featured by bleeding from the gums associated with a nitritoid reaction. Farley's [3] case of apparent acute lymphatic leukemia, without bleeding, and Vill's [13] cases with thrombocytopenia and marked leukocytosis, with both bleeding and purpura, are entirely atypical, and although little doubt can be raised as to the etiologic character of previous arsenical therapy, they cannot be compared with the other cases in this series.

RECAPITULATION

A comparison between the different types of blood dyscrasias described shows that, while the majority of cases present symptoms fairly typical of one group or another, there are a number of borderline cases which are characterized by a variety of conditions. The arsphenamines appear to have at least two separate effects, the one a depression of bone-marrow function, the other a toxic action on the blood platelets in the peripheral circulation. The granulocytopenic and the aplastic groups are closely related, both showing depressed bone-marrow function, the difference between the two depending merely on the extent to which red cell production has been affected. The thrombocytopenic group seems to be distinct from the other two both in clinical characteristics and in prognosis, and a different explanation for this syndrome has therefore been advanced. However, seven cases were noted (table 2) in which some degree of bone-marrow depression was superimposed on the fairly typical picture of acute thrombocytopenia, and four definitely aplastic cases (table 4, cases 4, 5, 12 and 34) showed typical hemorrhagic purpura, with marked thrombocytopenia and a very short period between the final injection of the drug and the development of symptoms. The few atypical cases likewise show a mixed symptomatology, comprising elements from both groups; the clinical manifestations in any case depend, therefore, on the chance preponderance of one effect or the other.

The question as to which of the arsenicals is most likely responsible for the development of blood dyscrasias cannot be entirely solved. In twenty-three cases presenting the acute thrombocytopenic syndrome, neoarsphenamine was used alone in thirteen cases and in conjunction with other arsenicals in two others, sulpharsphenamine alone in four cases and with other preparations in three more, and silver arsphenamine in one case. Cole's [2] two cases of purpura hemorrhagica, not included in this study, both followed sulpharsphenamine. In the aplastic group neoarsphenamine was responsible for by far the greater majority, with sulpharsphenamine next in line. In the granulocytopenic cases, however, a wide variety of drugs is found, and not one is predominant. While neoarsphenamine has been blamed for the majority of these reactions, it is most probably because of its general use that such has been the case, and had sulpharsphenamine been used to the same extent, many more such reactions would most likely have been found. It is interesting to note that no case has been reported following tryparsamide alone, and only one case in which it had been used at all.

13. Vill, G.: Hemorrhages into the Skin and Mucous Membranes, with Bone-Marrow Hypoplasia and Death, from the Destructive Action of Arsphenamine, München. med. Wchnschr. **68**: 1675 (Dec. 30) 1921.

PROGNOSIS

The prognosis in these conditions seems to depend entirely on the extent of bone-marrow depression. In the thrombocytopenic group, in which there is no evidence of depressed bone-marrow function, the prognosis is invariably good. In the granulocytopenic group a favorable outcome may be expected as long as complete agranulocytosis is not present. Recovery occurred in only two cases in which there was a complete absence of neutrophylic granulocytes; in neither case was there any specific treatment, recovery depending probably on the transitory nature of the depression. In none of the other cases of this group could treatment be held responsible for recovery, recuperation of bone-marrow function taking place spontaneously. The prognosis of the aplastic group is invariably poor, only six recoveries of these cases being recorded. In three of these, repeated transfusions seemed to be directly responsible for maintaining the life of the patient until recovery of bone-marrow function took place; in the other three cases no single therapeutic factor could be implicated.

In order to determine the prognosis in a given case, an attempt at classification should be made as soon as possible. Purpura, when present, is of course merely a symptom and does not constantly suggest the character of the blood picture. The study of the latter is the most important prognostic indicator; a normal total white cell count and no diminution in the percentage of polymorphonuclears are favorable indications, a leukopenia and a low polymorphonuclear count in the differential smear unfavorable. Accurate enumeration of the platelets is technically difficult, but an estimation of their numbers by a study of the smear is a valuable aid; the initial level of the platelet count is prognostically unimportant, but in those cases in which it remains low the outcome is usually unfavorable. The particular drug used and the total dosage make but little difference, but the shorter the interval of time between the final dose of the arsenical and the appearance of symptoms, the better is the prognosis.

TREATMENT

A wide variety of therapeutic agents have been employed in the treatment of these conditions. The object in most cases has been the symptomatic relief of bleeding and direct measures toward combating anemia. In the thrombocytopenic group of cases, sodium thiosulphate, calcium and hemostatic serums were the usual choice; blood transfusion was used twice, while in five of the twelve cases no specific treatment was employed. In the first case reported by us, treatment for shock alone was used, while in the other case the second induced attack was allowed to pass without any therapeutic measures, with prompt and complete recovery in both instances. It would therefore seem that in those cases in which there is a simple acute thrombocytopenia, without evidence of bone-marrow depression, any remedial agent is entirely superfluous and none, other than minor symptomatic relief, is indicated.

In the agranulocytic cases, transfusion was employed only once, without benefit. Most of the cases in this group were either rapidly fatal or sufficiently mild to warrant merely symptomatic treatment, so that no conclusions can be drawn as to the effectiveness of those measures used. In the third group, in which depressed bone-marrow function is the important feature, the aplastic, blood transfusion has had ample trial, being

the main method of treatment in seventeen of the thirty-four cases. In only three of these did it prove a life-saving measure, but this is sufficient to justify its trial in all such cases. Hemostatic preparations, calcium in the form of the chloride or lactate, and sodium thiosulphate were used in a number of cases, but always without result. It may be concluded that aplasia of the bone marrow can be treated effectively only with repeated transfusions, and with these merely in the hope of tiding the patient over until spontaneous recuperation of its function has taken place. Jackson [14] has recently reported favorable results in a number of cases of profound leukopenia treated with pentose nucleotide, and it is possible that this, too, would have a favorable influence on the course of these cases.

MECHANISM

The manner in which the arsenicals bring about such reactions as are represented by this group of cases has been the subject of considerable speculation. Because of the striking similarity between the aplastic cases and the cases of chronic benzene poisoning, as has been pointed out by a number of observers, the benzene radical has been incriminated as that part of the molecule of the arsenical preparation directly responsible for this particular toxic manifestation. The benzene group is common to all the arsenicals used in antisyphilitic therapy; its action as a bone-marrow depressant is well established, so that in spite of the relatively small amount used it is probable that this view is the correct one. Wheelihan [15] has reported the only case in the literature of granulocytopenia following an inorganic arsenic compound. His case, that of a child treated with potassium arsenite, showed a fairly typical picture of agranulocytic angina. Whether the granulocytopenia was due directly to the action of arsenic or whether there was simply a failure of response of the bone marrow to acute infection, the etiologic rôle of arsenic cannot be ruled out in either case. However, it has not been demonstrated that arsenic and not the benzene radical is responsible in the cases following arsenical therapy, and the prevailing view must be accepted.

While the benzene radical may be the causative factor in the production of depressed bone-marrow function, it cannot be held responsible for the acute thrombocytopenic cases. In this group there is no evidence of depressed bone-marrow function; the destruction of platelets is an acute and a peripheral phenomenon, and their rapid regeneration speaks against any specific toxic action on the megakaryocytes. Smith [3] has suggested that the thrombocytopenic-purpuric syndrome may be due to a "platelet crisis"; if this view simply means a rapid destruction of platelets in the peripheral circulation, it is without doubt correct, but just how this is brought about remains a problem. Jui-Wu-Mu [16] has studied the immediate effect of neoarsphenamine on the platelets; in ten of the fourteen cases studied there was a diminution in the platelet count from an average level of 350,000 to between 170,000 and 300,000 within from ten to thirty minutes, followed by a thrombocytosis up to 450,000, during the course of the following five days. While in none of his patients did the platelet count reach the critical level for the appearance of purpura or bleeding, all were normal individuals and none had had previous injections of the drug.

It is concluded that the thrombocytopenic type of reaction is of an "anaphylactoid" nature. All the cases of this group developed only after considerable treatment with numbers of injections, and it is probable that a specific sensitivity toward the arsphenamines gradually took place. In four cases additional injections were given after the first appearance of symptoms and in all of these, the two cases reported by the authors and those reported by Smith [3] and by Lespinne and Wydooghe,[3] similar reactions developed following the subsequent dose. The different mechanisms are reflected in the prognostic difference between this group and that in which depressed bone-marrow function is the prominent feature.

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ABNORMAL UTERINE BLEEDING IN BLOOD DYSCRASIAS

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During the past few years the gynecologic staff of the Buffalo General Hospital has observed four cases of blood disease in which abnormal uterine bleeding was the first and most important symptom bringing the patient to the physician. Although this has been pointed out repeatedly (Virchow, Novak, Weibel and Kelly) it seems doubtful that its importance is sufficiently recognized. Additional examination of hospital records since 1925 has revealed a considerable group of hematologic cases in which irregular uterine bleeding was an outstanding complaint although not the one for which the patients consulted their physicians. It is my purpose in this paper to review these two groups of cases and to emphasize diseases of the blood and blood-forming organs as underlying causes in certain cases of abnormal menstrual flow.

A. BLOOD DISEASE IN WHICH ABNORMAL UTERINE BLEEDING WAS THE FIRST AND MAJOR SYMPTOM

CASE 1.—Mrs. D. G., white, aged 46, was admitted to the hospital complaining of profuse vaginal bleeding. She had had six children, the oldest being 27 and the youngest 8 years of age. The labors and puerperia had been normal. Menstruation had always been regular and of moderate flow until two weeks before her admission. Acute profuse uterine bleeding then occurred which ordinary methods failed to control. The continued bleeding and resulting weakness forced the patient to enter the hospital. At no time had there been a complaint of pain. The temperature on admission was 100.5 F.

Except for an extreme pallor, physical examination revealed nothing of importance. The heart and lungs were normal. The liver and spleen as well as the lymphatic glands were not enlarged. Vaginal bleeding was profuse, but palpation of the pelvic structures showed no abnormalities.

Examination of the blood on admission was as follows: erythrocytes, 1,464,000; hemoglobin, 25 to 30 per cent; leukocytes, 23,700; polymorphonuclear cells, 2 per cent, and lymphocytes, 98 per cent. Three subsequent counts showed close agreement. In the stained film the erythrocytes were found to vary in size and shape. Achromia and polychromatophilia were noted. The blood picture suggested acute lymphatic leukemia.

The clinical course of the disease was rapid. The vagina was repeatedly packed in an unsuccessful effort to control the

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bleeding. The patient failed to rally despite blood transfusions two and five days following admission. Death occurred on the eighth day. Necropsy was not permitted.

CASE 2.—Mrs. I. P., white, aged 30, admitted to the hospital, April 9, 1929, complained of irregular and profuse uterine bleeding. She had had three pregnancies, the first terminating in an abortion at three and a half months, the second in delivery of a still-born infant at term (breech presentation) and the third in the birth of a normal child four years before. The family history was unimportant. Her menses began at 13, were of four to six days' duration, regular and of moderate flow. Subsequent to the stillbirth, seven years before, she bled continuously for eight weeks. Since that time her periods had been irregular, occurring every two to four weeks and lasting from eight to ten days. The flow had been increasingly profuse and without tendency to clot formation. In January, 1928, two roentgen treatments were given in an effort to control the bleeding. These, however, were without effect. For several months before admission she had suffered severe protracted nosebleeds, especially about the time of the menstrual periods. Of late there had been an increasing tendency of the gums to bleed following the use of the tooth brush. She also reported that the slightest trauma was followed by "black and blue spots" on the skin surfaces.

Examination showed that the skin and mucous membranes were pale. On the left leg and foot were multiple cutaneous ecchymoses. The gums were pale and bled on the slightest pressure. Examination of the chest revealed no abnormality of the lungs. The heart was not enlarged, but a soft, blowing, systolic bruit was heard over the entire precordium. The heart rate was 80. The systolic blood pressure was 150 and the diastolic 0. The liver and spleen were not palpable. On vaginal examination the uterus was normal in size and position. No adnexal abnormality was detected. Vaginal bleeding was moderately profuse.

Examination of the blood showed an erythrocyte count of 2,330,000, a hemoglobin percentage of 25 (Sahli), and a leukocyte total of 8,250. The blood smear was that of secondary anemia. The platelets, however, were decreased, numbering only 36,000. The blood clotting time was within normal limits, while the bleeding time was prolonged to twenty minutes. The Wassermann reaction of the blood was negative. Urinalysis revealed a moderate amount of albumin.

A diagnosis of thrombocytopenic purpura hemorrhagica was made.

To prevent further loss of blood, the patient was put to bed and uterine bleeding was controlled by repeated vaginal packing. On the third day following admission she suffered a severe nosebleed, lasting twelve hours. Finally, after eight days of general supportive care, splenectomy was performed. At operation the spleen was found enlarged and somewhat adherent. Pathologic examination of the removed organ, however, showed no remarkable histologic changes.

The postoperative course was unusually stormy but, with the aid of two blood transfusions, gradual improvement in her condition occurred. Further progress was marred two weeks following operation by a complicating pleurisy with effusion. This, however, cleared, and finally during her sixth postoperative week the patient was discharged from the hospital. All tendency to hemorrhage had ceased. Examination of the blood at this time showed an increase in platelets to 350,000.

CASE 3.—Mrs. D. G., white, aged 23, was brought into the hospital, Dec. 23, 1929, in a comatose condition. The history, obtained from her family physician, was as follows: Four months before her admission she had had a difficult labor complicated by a complete perineal laceration. Three weeks before her entrance to the hospital a perineorrhaphy had been done. Convalescence was uneventful until suddenly on the twelfth postoperative day the patient bled profusely from the vagina. After five days of continued and copious bleeding she became exsanguinated. A blood transfusion was given and the patient then sent to the hospital in a comatose condition. It was felt that a slipping of one of the perineal sutures may have accounted for the profuse hemorrhage.

General physical examination revealed a marked pallor of the skin and mucous surfaces. The breath sounds were normal. The heart was rapid and the sounds were of only fair quality. The systolic blood pressure was 100 and the diastolic 60. The liver and spleen were not palpable. Examination of the operative field showed complete healing of the perineum with no palpable evidence of pelvic abnormality. Vaginal bleeding was moderate at this time.

Blood was found in the vomitus, intestinal contents and urine. Ecchymotic infiltrations of the skin were present at the sites of needle puncture for transfusion and hypodermoclysis.

The blood count was: erythrocytes, 1,660,000; hemoglobin, 32 per cent (Sahli); leukocytes, 11,500, and platelets, 58,000. In the stained smear the changes were those of secondary anemia. The bleeding time was sixty minutes and the clotting time normal.

A diagnosis of thrombocytopenic purpura was made, but the condition of the patient was considered too grave for splenectomy. Despite repeated blood transfusions the bleeding persisted, and death occurred thirteen days following admission.

The following conditions were found at necropsy:[1] Bone Marrow: The decalcified specimen of a vertebra showed a mild hyperplasia of all elements. The megakaryocytes were not decreased. There were many myelocytes but comparatively few neutrophilic leukocytes and nucleated red cells (normoblasts). The reticulum cells were moderately increased.

Spleen: There was a distinct swelling of the reticulum of the pulp and of the sinus endothelial cells. The malpighian bodies were not remarkable. Noteworthy was the presence of a moderate number of leukocytes within the red pulp and within some of the sinuses. A few of the reticulum cells contained a small amount of brownish pigment.

Lymph Glands: There was a pronounced proliferation of the reticulum cells and endothelial cells in the cortex as well as in the medullary sinuses. Occasional leukocytes were seen in the lymph sinuses.

Liver: Hemosiderin pigment deposits were found in some of the Kupffer cells. A few small granules of the same pigment were occasionally noted in the liver cells themselves.

Kidney: There was a very distinct inflammation in the medulla and to a less degree in the cortex. It was especially marked about the glomeruli. Most striking were the many blood and hyaline casts and the occasional leukocytic exudate in the tubules. The subepithelial layer in the pelvis showed distinct inflammatory reaction.

Cecum: The mucosa revealed recent hemorrhages on the surface and a distinct infiltration of its superficial layer with plasma cells, macrophages and an occasional leukocyte.

Uterus: The endometrium was thin with some dilatation of the glands, a few of which contained leukocytic exudate. There were localized areas of interstitial endometritis with infiltration of leukocytes, lymphocytes and macrophages. Very fine granules of hemosiderin pigment were present in some of the latter.

CASE 4.—Mrs. I. H., white, aged 37, admitted to the hospital, Jan. 11, 1930, complained of profuse menstrual bleeding and progressive weakness. She had had one pregnancy ten years before. The labor and puerperium were normal. In 1922 her appendix had been removed. Her family history was negative for transmitted disease. Menstruation had begun at 14 and had been regular every four weeks, the flow being of five to six days' duration, and of normal amount. For the past two years she had noticed that her menstrual bleeding had become more profuse and the flow unduly prolonged. During the menstrual period preceding admission she flowed very freely for twelve days.

On examination the patient appeared very pale and acutely ill. Her temperature was 101 F. The nose and throat were normal. There was no palpable lymph node enlargement. The breath sounds were clear. The heart was not enlarged and there were no murmurs heard. The systolic pressure was 110 and the diastolic 60. The liver and spleen were not palpable. The uterus was of normal size and position and no adnexal masses were felt. There was moderate bleeding from the vagina. The Wassermann and Kahn tests of the blood were negative. The urine showed a trace of albumin.

1. This is a summary of the histologic observations as reported by Dr. A. G. Foord, hospital pathologist.

Examination of the blood revealed: red cells, 1,280,000; hemoglobin, 16 per cent (Sahli); white cells, 2,270, and platelets, 158,000. Differential count showed polymorphonuclear cells to be 20 per cent, lymphocytes 72 per cent, and monocytes 8 per cent. Careful examination of the blood smear failed to reveal signs of red cell regeneration. The bleeding and clotting times were within normal limits. The van den Bergh reaction was less than 0.2 unit. The icteric index was 5. Urobilin and urobilinogen were absent from the urine.

Two blood transfusions were given, and the patient was discharged slightly improved. The nature of the anemia had not been determined. She returned, however, one week later complaining of continued and moderately profuse uterine bleeding. Her blood at this time showed a red cell count of 2,200,000 and a hemoglobin which had risen to 45 per cent (Sahli). The leukocyte total and the differential smear were essentially unchanged. An intra-uterine radium application of 320 milligram hours was given to control the bleeding, and transfusion was again performed.

Six weeks later she was admitted for the third time. Her menstruation, following radium treatment, had been markedly profuse, subsequent to which her condition rapidly became grave. The observations on further examination of her blood did not differ essentially from those of her second admission. Another intra-uterine radium application of 750 milligram hours was given, with some abatement of vaginal bleeding; but despite two additional blood transfusions her condition progressed to death five weeks later. Necropsy was not obtained.

In the blood picture there was an absolute diminution of all the elements supplied by the bone marrow with the possible exception of the thrombocytes. In addition, evidences of abnormal blood destruction were absent. Regenerative response even after vigorous treatment was, for the most part, lacking. Because of these observations a diagnosis of aplastic anemia (myelophthisis) was made.

COMMENT

Profuse and irregular uterine bleeding in the blood dyscrasias is often an important occurrence and many times a symptom of outstanding diagnostic significance. Virchow, cited by Novak,[2] believed that menstrual disturbances are very frequently present in leukemia and that menorrhagia, at times associated with intermenstrual bleeding, is the more common manifestation of this disturbance. Weibel,[3] in discussing dangerous functional uterine hemorrhages, speaks of thrombocytopenic purpura as a possible cause of bleeding and emphasizes the importance of careful blood examination for diagnosis. Kelly,[4] in a consideration of menstrual disorders, mentions blood dycrasias among the diagnostic possibilities, the menstrual hemorrhage being but a local expression of a general disease. In addition, he reports a case of aplastic anemia marked by abnormal uterine bleeding.

Since hemorrhage from the mucous membranes is of common occurrence in many of the blood dyscrasias, it is not surprising that the uterus is occasionally the site for such bleeding as well as the nose, bladder, stomach or bowel. The uterus may be the only source of bleeding, or such hemorrhage may occur in combination with that from other mucous membranes.

B. BLOOD DISEASE IN WHICH ABNORMAL UTERINE BLEEDING WAS AN IMPORTANT BUT NOT A MAJOR SYMPTOM

In gathering these data, the hospital records of blood disease occurring in women of the reproductive age were examined. Since 1925, a group of forty-five cases has accumulated. In none of these could pelvic disease as such be demonstrated.

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3. Weibel, W.: Med. Klin. **27**: 732 (May 15) 1931.
4. Kelly, H. A.: Radium in the Treatment of Menstrual Disorders, J. A. M. A. **97**: 760-762 (Sept. 12) 1931.

DISTRIBUTION OF THE FORTY-FIVE CASES

Secondary Anemia (nineteen cases).—In these patients the erythrocyte counts varied from 1,500,000 to 4,000,000 and the hemoglobin from 25 to 70 per cent. The associated conditions were either infections or new growths, but in no case was the pelvis involved. In twelve (63.1 per cent) of these cases, menstruation was normal. Five (26.3 per cent) showed either a hypomenorrhea (scant or infrequent flow) or an occasional amenorrhea. In the remaining two cases (10.5 per cent), menstrual bleeding was excessive or unduly prolonged.

Purpura Hemorrhagica (eight cases).—All (100 per cent) showed an increased and prolonged flow. This symptom was prominent among their other complaints.

Leukemia (eight cases).—In six (75 per cent), menstruation was undisturbed. In the remaining two cases (25 per cent), menstrual bleeding was excessive, was prolonged, and occurred with increased frequency.

Pernicious Anemia (six cases).—Normal menstruation was present in five cases (83.3 per cent). In the last case (16.7 per cent), flow was less frequent, smaller in amount and of shorter duration than normal.

Aplastic Anemia (two cases).—In both (100 per cent), uterine bleeding was excessive, prolonged and irregular.

Splenic Anemia (one case).—In this single case, menorrhagia was marked.

Chlorosis (one case).—This patient showed no disturbance of the menstrual flow.

COMMENT

Of the total forty-five cases of blood disease in women during the reproductive period of life, a normal menstrual flow was present in twenty-three (51.1 per cent); in fifteen (33.3 per cent), menstrual bleeding was excessive, unduly prolonged, or too frequent, and in seven (15.5 per cent) it was diminished or infrequent. Therefore, about one half of this series showed some deviation of menstruation from the normal. This menstrual irregularity figured prominently in the symptom complexes which brought these patients to their physicians.

It is felt that, in the past, sufficient emphasis has not been placed on disturbance of the menstrual flow occurring in those cases in which no pelvic abnormality is demonstrable. It is because of the absence of a pelvic lesion that often no importance is placed on the menstrual symptom. In other cases, when the flow has been excessive, curettage has often been performed, but bleeding soon recurs. It is in just such cases that a complete study of the blood will sometimes reveal an underlying blood disease as the etiologic factor, the menstrual disturbance being but a local manifestation of a systemic disorder.

In those cases in which menstruation is diminished, delayed or absent, error in diagnosis is less apt to occur. Here the physician, suspecting that the scant irregular flow is the result of an anemia, will examine his patient's blood and often uncover the true nature of the disease. It is in the other group of excessive or prolonged bleeding that blood disease is less commonly considered and mistakes in diagnosis are more frequently made.

SUMMARY

1. In four cases here reported, abnormal uterine bleeding was the first and most prominent symptom of a blood dyscrasia.

2. Abnormal uterine bleeding is sometimes the primary and most important symptom of an underlying blood dyscrasia.

3. Menstrual abnormality has been observed in practically all the blood dyscrasias, including secondary anemia.

4. Thrombocytopenic purpura, above the other dyscrasias, seems most commonly accompanied by excessive, prolonged and irregular uterine bleeding.

5. Careful and complete blood study is often of diagnostic importance in cases of disturbed menstruation for which no obvious pelvic lesion is responsible.

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HEMOPHILIA

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Hemophilia is usually classified under the hemorrhagic diatheses. The disease is manifested clinically by excessive hemorrhage. The hemorrhages may be spontaneous or may follow slight injury. The most trivial trauma may result in fatal hemorrhage. There are many instances on record of hemophiliac patients who bled to death from a cut finger or lip. The spontaneous loss of a deciduous tooth has caused fatal hemorrhage. Hemorrhages may occur any place in the body: under the skin, into the muscle and in the mouth, stomach or intestine. Perhaps the most characteristic location of hemorrhage is into the joints.

Hemophilia is interesting from the standpoint of eugenics, because it is the most hereditary of all hereditary diseases. The transmission is sex-linked, the disease being manifested only in males, while it is transmitted through females. There is no direct trans-

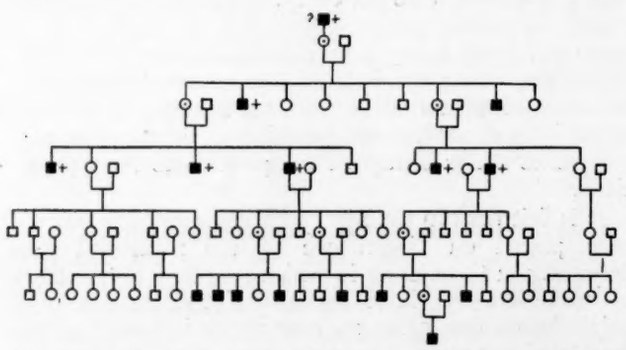

Fig. 1.—The family tree of the Hawkins-Cooper family. This family has lived in southern Illinois since before the Civil War. The squares represent males; the black squares, those with hemophilia; the black squares with crosses, those who bled to death; the circles, females; the circles with inner dots, transmitters of hemophilia. The chart shows fifteen patients known to have hemophilia and one whose condition is questionable. All eight persons in this generation who have hemophilia have been seen.

mission from a person with hemophilia to his son. People with hemophilia transmit the disease through their daughters to their grandsons. A transmitter of hemophilia may confer the disease on her sons, and her daughters may be transmitters and may, therefore, transmit it to their sons.

From the standpoint of the laboratory hemophilia is characterized by a great prolongation of the coagulation time.

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Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Pathology and Physiology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

About a year ago my associates and I reported the results of ovarian therapy and ovarian transplant on two patients with hemophilia. The rationale of this treatment is obvious. The disease occurs only in males, while it is transmitted directly through females. The female in order to transmit the disease must potentially have the disease, and there must be something in the female mechanism that holds the disease in abeyance. The greatest difference between males and females lies in the sex organs, and the greatest of the female sex organs is the ovary. So far as I know, the person who first brought out this point was Grant of London, in 1904. He treated a patient suffering from hemophilia with ovarian extract for a period of six weeks and reported good results. So far as I know, the only fresh human ovarian transplant on a hemophiliac patient was performed by Dr. H. B. Thomas of the University of Illinois College of Medicine.

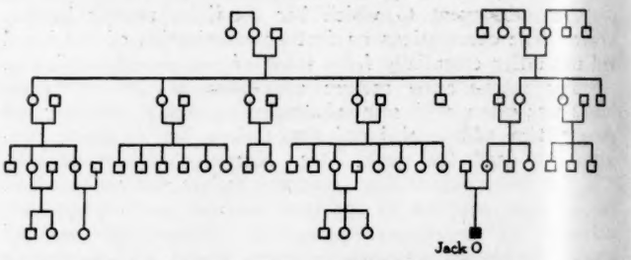

Fig. 4.—The family tree of J. O., a patient who suffers from sporadic hemophilia. His maternal grandmother bled excessively at the birth of each of her three children and had several almost fatal hemorrhages at the time of the menopause. The squares denote males; the black squares, those with hemophilia; the circles, females; the circles with dots, transmitters of hemophilia.

During the last two years my associates and I have had an opportunity to study thirty-five patients with hemophilia. One of them was born at our hospital and died of pneumonia at the age of 6 months. The other thirty-four patients varied in age from 22 months to 52 years. We had three patients from one family and two patients from each of six other families. The remaining twenty patients each represented a separate family. Twenty-eight of these thirty-five patients gave a definite family history of hemophilia (figs. 1, 2 and 3). The remaining seven were unable to trace a hemophiliac strain (figs. 4 and 5). We have worked out twenty family trees showing the hemophiliac strain. The charts represent from four to seven generations. All are in complete accordance with Nasses' Law.

A mathematical analysis of some of these genealogical charts and of some obtained from the literature brought out interesting points. The children of transmitters of hemophilia are predominantly male: 63 per cent male and 37 per cent female, or about 1.7 males to every female (table 1). Of the male offspring of transmitters, 71 per cent had hemophilia. Of the transmitters' daughters, 38 per cent transmitted hemophilia, 51 per cent had no children, and 1 per cent had only daughters, while less than 10 per cent bore at least one normal son and no sons with hemophilia. In other words, a transmitter of hemophilia has an almost 2:1 chance of having sons instead of daughters. These sons have a 2:1 chance of having hemophilia. Of the transmitters' daughters 51 per cent had no children. Most of them did not marry, while less than 10 per cent had normal sons.

In the families studied, only a few of the persons with hemophilia had children. This is chiefly because of the high mortality. According to Carrière, 54 per cent die before the fifth year, and 89 per cent before the

twentieth year. The children of persons with hemophilia are more apt to be female than male. Of the male offspring of persons with hemophilia none had hemophilia, and none transmitted hemophilia. Of the daughters, 46 per cent transmitted hemophilia, 43 per cent had no children, and 4 per cent had only daughters, while only 7 per cent had at least one normal son and no sons with hemophilia. Nature seems to have provided that this disease shall go on forever, because the transmitters of hemophilia have more sons than daughters, while persons with hemophilia have more daughters than sons. Both those with hemophilia and transmitters seem to have families a little above the average in size.

Table 2 represents an analysis similar to that in the preceding paragraph, but includes a larger number of families, records of some being obtained from the literature.

TABLE 1.—*Analysis of Eleven American Families in Which Hemophilia Occurs* *

	Children of Persons Transmitting Hemophilia							Children of Persons with Hemophilia						
	Male		Female					Male		Female				
Family	Total	Hemophiliac	Total	Transmitters	No Children	Daughters Only	Normal Sons	Total	Hemophiliac	Total	Transmitters	No Children	Daughters Only	Normal Sons
Shaw	10	8	7	3	3	0	1	0	0	1	1	0	0	0
Schradel	12	4	2	2	0	0	0	0	0	0	0	0	0	0
Worth	7	5	6	1	5	0	0	0	0	0	0	0	0	0
Kane	4	3	4	2	2	0	0	0	0	0	0	0	0	0
Robinson	10	7	6	3	3	0	0	1	0	2	0	2	0	0
Beacher-Lewis	15	10	11	4	6	0	1	6	0	3	2	1	0	0
Baldwin	7	5	5	1	1	0	3	0	0	0	0	0	0	0
Hawkins-Cooper	22	15	11	4	5	1	1	5	0	7	3	3	1	0
Chapman-Penn	18	14	20	7	11	0	2	8	0	7	1	4	0	2
Appleton-Swain	22	20	9	4	5	0	0	4	0	8	6	2	0	0
Zolotar	16	11	3	1	2	0	0	0	0	0	0	0	0	0
Totals	143	102	84	32	43	1	8	24	0	28	13	12	1	2
Percentage	63	71.3	37	38.1	51.2	1.2	9.5	46.2	0	53.8	46.4	42.9	3.6	7.1

* The points brought out are that the transmitters have more sons than daughters, while people with hemophilia have more daughters than sons. Two of three of the transmitters' sons had hemophilia. Only 9.5 per cent of the transmitters' daughters bore normal sons, while only 7 per cent of the daughters of the persons with hemophilia bore normal sons.

TABLE 2.—*Analysis of Eighteen Families in Which Hemophilia Occurs* *

	Children of Persons Transmitting Hemophilia							Children of Persons with Hemophilia						
	Male		Female					Male		Female				
Family	Total	Hemophiliac	Total	Transmitters	No Children	Daughters Only	Normal Sons	Total	Hemophiliac	Total	Transmitters	No Children	Daughters Only	Normal Sons
Appleton-Swain	22	20	9	4	5	0	0	4	0	8	6	2	0	0
Schradel	12	4	2	2	0	0	0	1	0	0	0	0	0	0
Brown	22	16	11	3	6	0	2	5	0	7	3	3	1	0
Zolotar	16	11	3	1	2	0	0	0	0	0	0	0	0	0
Pongracz	43	41	27	14	10	1	2	0	0	0	0	0	0	0
Groszman	29	24	22	9	10	0	3	0	0	0	0	0	0	0
Lowi	6	4	1	0	0	0	1	1	0	2	1	1	0	0
Reichnitzer	6	3	4	1	1	0	2	0	0	0	0	0	0	0
Schwartz	8	4	5	0	2	0	3	5	0	3	0	3	0	0
Pletzer	16	16	11	5	4	1	1	0	0	0	0	0	0	0
Hay	20	19	7	5	2	0	0	4	0	5	4	1	0	0
Müller-Bernhardt	31	16	20	5	5	6	4	0	0	1	1	0	0	0
Lorez	7	3	7	2	2	2	1	0	0	0	0	0	0	0
Barth	23	14	18	1	11	1	5	15	0	27	8	15	2	2
Ernst	9	6	9	1	6	0	2	0	0	0	0	0	0	0
Knöller	8	7	5	2	2	0	1	0	0	3	1	2	0	0
M. F.	11	8	7	1	5	1	0	0	0	0	0	0	0	0
Shaw	10	8	7	3	3	0	1	0	0	1	1	0	0	0
Totals	299	224	175	59	76	12	28	35	0	57	25	27	3	2
Percentage	63.1	74.7	36.9	33.7	43.4	6.9	16.2	38.0	0	61.3	43.9	47.4	5.3	3.5

* Some of these families are American, while others in which severe hemophilia occurs were obtained largely from the German literature. This chart brings out the points that are shown in table 1: that transmitters have more sons than daughters, while persons with hemophilia have more daughters than sons. In this group 16 per cent of the transmitters had normal sons, while only 3.5 per cent of the daughters of persons with hemophilia had normal sons.

CLINICAL MANIFESTATIONS

The ordinary clinical picture of hemophilia is well known. The prolonged bleeding following slight injury is perhaps the most outstanding feature. Fatal hemorrhage from a cut finger or lip is not uncommon. Some of the children bleed to death from the cord at birth. One of our families gave a history of fatal hemorrhage in four consecutive sons following circumcision; the fifth narrowly escaped death and is one of our patients. The cutting of teeth or the loss of deciduous teeth is often associated with severe hemorrhage. Extraction of teeth by a dentist is a common cause of death. Subcutaneous hemorrhages following slight trauma often become extensive. One of our patients fell out of bed and had a subcutaneous hemorrhage literally covering more than half of the body surface. Subcutaneous hemorrhage following small scratches often spreads until it includes an entire arm or leg. The advancing margin is sometimes still progressing when the site of the injury has entirely cleared.

Intramuscular hemorrhages are often spontaneous. We have had several occur in patients who had been confined to bed for several weeks. The muscle hemorrhages are often extremely painful. The involved parts become swollen, tense and shiny. The white cell count is increased to 10,000 or 12,000, and the local and general temperatures are elevated. One boy with a large intramuscular hemorrhage in the left thigh (fig. 6) had a cutaneous temperature of 36.25 C. (97.2 F.), while the right thigh had a temperature of 32.75 C. (91 F.) on a corresponding area. His general temperature went as high as 104 F. Free bleeding, as from the nose or

the kidney, is usually not accompanied by elevation of temperature.

Hemophilia may simulate many diseases. Hemorrhage into any of the abdominal organs may closely resemble an acute condition. There are pain, tenderness, rigidity, an elevation of temperature, increase of white cells and, not uncommonly, nausea and vomiting. It is often not possible to differentiate hemorrhage from an acute inflammatory abdominal condition until the blood appears in the urine or stool, or the discoloration reaches the surface, which may require several days if the hemorrhage is deep-seated. These abdominal hemorrhages are most common in the right lower quadrant, in the iliocecal region, where they closely mimic acute appendicitis.

Fig. 6.—Appearance of J. K., brother of W. K., taken in May, 1931; age, 17 years; weight, 69 pounds (31.3 Kg.). Observe the tumefaction of the left thigh, which followed a recent hemorrhage. The circumference of the left thigh was 14¾ inches (37.4 cm.), while that of right thigh at the same level was 12 inches (30.45 cm.). Observe the deformity of the left knee and the atrophy of the muscles of the left leg. This patient had not been able to walk without crutches for more than three years.

The diagnosis of bleeding peptic ulcer, because of the vomiting of blood or the finding of blood in the stool, is common. One of our patients had the following diagnoses made at one of the leading clinics: gastric ulcer, because of vomiting of blood, in spite of a negative roentgenogram; internal hemorrhoids, because of blood in the stool; kidney stone, because of periodic hematuria; arthritis, because of stiff, painful and swollen joints, and pyorrhea, because of bleeding gums. It was assumed that the teeth were the focus of infection causing the arthritis.

The most characteristic site of hemorrhage is into the joints. In the acute stage the joint is swollen, hot and very painful; usually there is no discoloration either early or late. The joint by preference is held in the position of flexion. In this position the capsule has its greatest capacity and therefore its least tension. There is an elevation of the local and general temperature. The duration of these acute attacks in the joints varies from a few days to many weeks. After repeated hemorrhages have occurred into the same joint, permanent damage is done. There is atrophy and proliferation of bone, roughening of the articular surfaces with lipping, and osteophyte formation. In the chronic stage the appearance of the joints closely resembles that of proliferative arthritis. Hemorrhage into the epiphyseal line may interfere with nutrition and stunt the growth of the bone. Hemorrhage into the hip joint often leads to destruction of the head of the femur, with consequent shortening of the leg. Probably no one with high grade hemophilia escapes crippling of the joints and bones. All of our patients except the one who died at 6 months gave a history of hemorrhages into the joints. The orthopedic manifestations in our cases will be reported in detail later by Dr. Thomas. In a recent article written by Dr. Keys there appears a careful pathologic report of a case of hemophiliac hemarthrosis.

A less common site of hemorrhage is into the brain and the spinal cord, resulting in transient paralysis. Several of our patients gave a history of paralysis. Disturbance of peripheral sensation was common. The lower extremities were most frequently involved. The sensations of heat and cold were most commonly impaired. One boy who suffered a severe hemorrhage high into the spinal cord was completely paralyzed for nine months. He now has extensive sensory disturbances (fig. 9), and a bilateral Babinski's sign, ankle and patellar clonus and ptosis of the left eyelid.

TREATMENT

The treatment has consisted entirely of endocrine preparations. Testicular extract produced no results. It was given to but one patient. Mammary extract was given to two patients over a period of three months, without benefit. Anterior pituitary solution is now being given to one patient, but it has not been given long enough to determine the results.

The greater part of our treatment has consisted of the administration of preparations of ovary. We have used a number of preparations, including theelin preparations made both here and abroad, whole ovary and a number of special preparations of ovary. These have been administered subcutaneously, intramuscularly and orally. The dosage has varied from 15 to 80 grains (0.972 to 5.2 Gm.) daily, depending on the case. Fresh, raw ovaries of the pig were given to two patients. There are a number of preparations on the list not as yet tried. So far our best results have been obtained by the use of whole ovarian preparations in rather large doses. Preparations of lutein have given good results. Theelin seemed to be of value during a bleeding phase but was not of value for continued use.

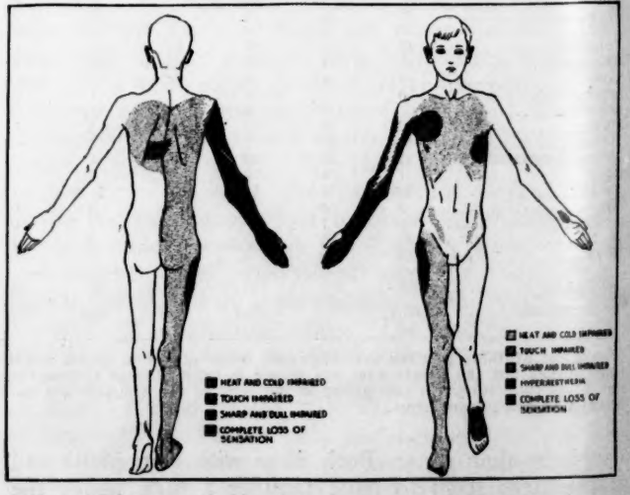

Fig. 9.—Sensory disturbances of W. K. These were the most extensive in any of our patients. They followed a hemorrhage high in the cord, which caused paralysis of all four extremities for nine months. Observe the ptosis of the left eyelid. The patient's reflexes were also disturbed; he had a bilateral Babinski sign and ankle and patellar clonus.

RESULTS OF TREATMENT

On the whole, the results have been satisfying. Most of the patients have shown both general and specific improvement. The specific improvement was judged by a decrease in coagulation time and a decrease in the number and severity of the hemorrhages. The general improvement was shown by increase in weight, stimulation of growth, and by increase in hemoglobin, with

general improvement in vitality. Perhaps these points could be best brought out by citing several specific cases.

CASE 1.—W. K., aged 14 years, entered the hospital in May, 1931 (figs. 9 and 10). He is a member of a definitely established hemophiliac family in New York. He has had repeated hemorrhages since birth. He had the cord hemorrhage which caused complete paralysis for nine months, and which left the marked sensory disturbances shown in figure 9. There are permanent changes, with limitation of motion in both elbows, both knees, the right shoulder and the left hip. His parents said he had never been entirely free from hemorrhages for even a month. He was able to attend school less than 50 per cent of the time, and part of this time he was on crutches. When he was admitted to the hospital, he was 62 inches (157.5 cm.) tall and weighed 72 pounds (32.7 Kg.). He has been under treatment for ten months, during which time he has grown 2½ inches (6.27 cm.) and gained 27 pounds (12.2 Kg.). The patient's hemoglobin has increased from 60 to 80 per cent. This patient did not come for treatment when in a bleeding phase, and we did not wait to get the range of his coagulation time. Before treatment was established, his coagulation time varied from one to four hours. Since he has been under treatment, his lowest coagulation time has been eleven minutes, with an average of between forty-five minutes and one hour. He has the complication of recurrent pyelitis. Each recurrence is initiated by chills and a temperature of 103 or 105 F. With each of these attacks of acute pyelitis the coagulation time has increased to about two hours. He has had several minor hemorrhages into the joints and one severe hemorrhage of the kidney accompanying his attacks of pyelitis. In December, 1931, acute tonsillitis developed, accompanied by an increase in coagulation time. Infections seem to throw these patients entirely out of balance. This is shown by a sudden increase in coagulation time and sometimes by a spontaneous hemorrhage. Infections seem to have the same effect on hemophilia that they have on diabetes. Dr. Thomas has been succesful in straightening the patient's knee. The shortening of the left leg, about 1½ inches (3.77 cm.), has been compensated for by a lift on the shoe, and he is now able to walk without crutches. His net gains are an increase in height of 2½ inches (6.27 cm.) and a gain in weight of 27 pounds (12.2 Kg.), a decrease in coagulation time to about one-half of the original, a straight leg and the ability to walk without crutches.

Fig. 10.—Appearance of W. K., brother of J. K., taken in May, 1931; age, 14 years; weight, 72 pounds (32.7 Kg.). There is marked deformity of the left hip, with shortening of the leg of about 1½ inches (3.77 cm.). The left knee shows enlargement, flexion and fixation. Both elbows also show bony deformity, with limitation of motion.

CASE 2.—The case of L. B.,[1] aged 22 years, has been reported briefly in an earlier article.[1] He was under observation for eighteen months before he was given any treatment. His coagulation time was taken at irregular intervals during this period. It varied from forty minutes to five hours. Because of the great variation in coagulation time it is plain that the results of treatment would be difficult to determine. If, for instance, treatment was established when the coagulation time was five hours, and the clotting time dropped to forty minutes, the results of the treatment would be considered excellent, while actually this was only his normal variation. If, on the other hand, treatment was begun when the clotting time was forty minutes, that is, just before it would normally increase to five hours, and the clotting time increased to two hours, the results would be considered poor. This shows the value of a prolonged period of observation prior to the institution of treatment. The majority of our patients have been observed for two months and have had the coagulation time taken eight times before treatment was begun. L. B. was placed on treatment early in April, 1930. His coagulation time became normal; after it had remained normal for two weeks, Dr. Thomas performed a fresh human ovarian transplant. The transplant was made in the right side of the lower anterior abdominal wall, beneath the muscle. The patient made an uneventful recovery. His blood remained normal, and he was symptom-free for five and one-half months. At that time the clotting time increased and spontaneous hemorrhage occurred. We assumed that the transplant had been absorbed. Three months later, eight months after the transplant, ovarian therapy was resumed. The severity of the hemorrhages decreased, and the coagulation time was reduced, but not to normal. After seven weeks the treatment was again discontinued. The clotting time increased, and the patient had fifteen spontaneous hemorrhages during the next three months. Ovarian therapy was resumed at this time, with the same results. It required two months of treatment before the clotting time became normal. After it had remained normal for several weeks he fell from a car and fractured his femur at the junction of the middle and lower thirds. There was no excessive hemorrhage at the site of the fracture. It was treated as a fracture in a normal person. He did not have as much as one degree of elevation of temperature. In three months he had a strong callous. It is interesting that this patient's

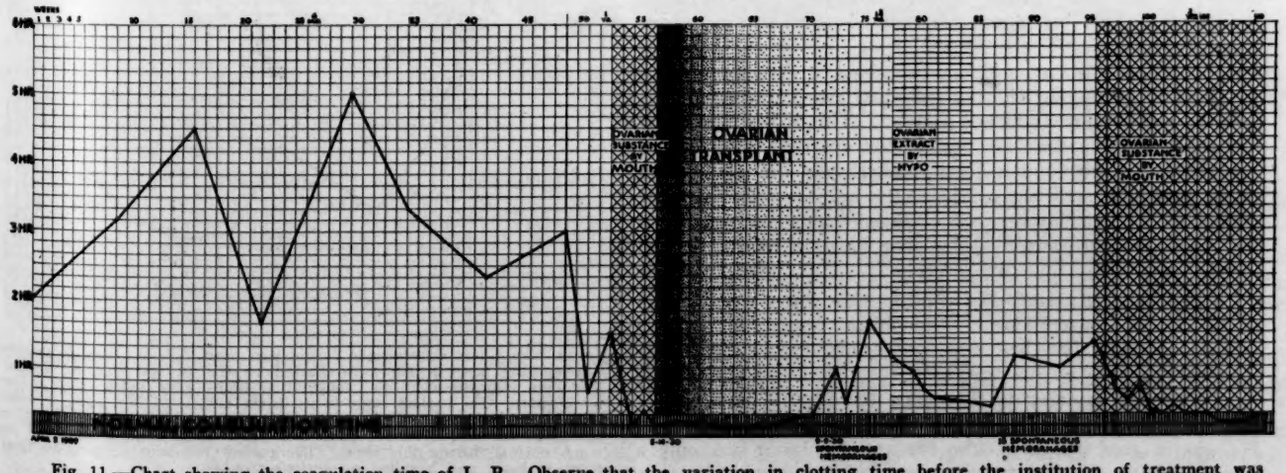

Fig. 11.—Chart showing the coagulation time of L. B. Observe that the variation in clotting time before the institution of treatment was from forty minutes to five hours. The dots show when coagulation times were taken. On May 14, 1930, the ovarian transplant was performed. This is shown by solid shading. The tapering off of the shading is to represent the gradual absorption of the ovary.

1. Birch, Carroll L.: Hemophilia, Proc. Exper. Biol. & Med. 28: 752 (April) 1931.

maternal grandfather, who was hemophiliac, bled to death following fracture of a leg. Treatment was continued, and the patient continued to do well until April 1, 1932, when he had a rather sharp attack of influenza. This infection seemed to throw him entirely out of balance. His coagulation time increased, and he had a spontaneous hemorrhage in the knee, shoulder and kidneys.

There have been several other instances in which an intercurrent infection has caused a sudden increase in coagulation time and the occurrence of spontaneous

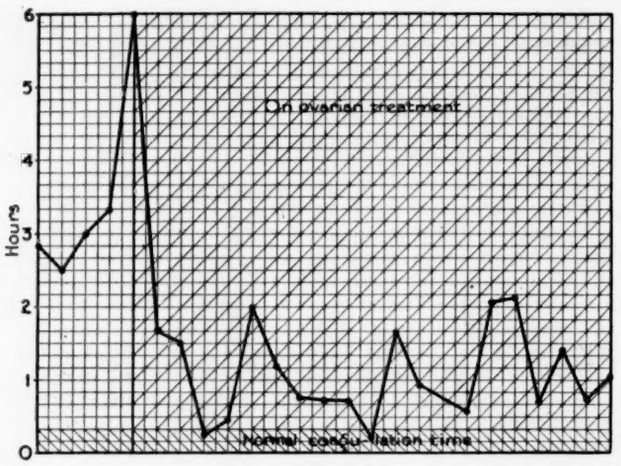

Fig. 12.—The coagulation curve of C. L. The coagulation time is charted in hours on the vertical line on the left. The dots show when coagulation times were taken, that is, one week apart. Note the sudden drop in time when treatment was begun. The curve shows a definite rhythmic fluctuation.

hemorrhages. One bleeding phase was induced by acute cystitis in a patient under treatment, while two others had the same results following tonsillitis.

CASE 4.—C. L., aged 26, showed a high grade of hemophilia, with involvement of many joints, including the elbows, knees and hips. He was under observation five months before he was given treatment. During these months his coagulation time varied from two and one-half to six hours. The fluctuation was rhythmic reaching a peak about every fourth week. Treatment was begun during a bleeding phase. His coagulation time took a sudden drop, and in three weeks had reached a normal level. It did not remain normal however, but fluctuated periodically, there being an elevation of clotting time about every fourth week. The shortest clotting time before treatment was instituted was two and one-half hours. After treatment was begun, the highest clotting time was two hours and seven minutes, and the lowest fifteen minutes. This is best shown by figure 12. During the year that he has received treatment he has had one or two minor joint hemorrhages, one moderately severe and one sufficiently serious to keep him in bed for several days. This hemorrhage occurred in his badly crippled hip. General improvements have gone hand in hand with the specific ones.

CASE 5.—J. O., aged 27 months who came to us from Alabama, had a severe case of hemophilia. During his twenty-seven months he had had nine emergency intravenous transfusions. Because of his age, only 2 cc. of blood was drawn from the vein in order to determine the clotting time. Only three determinations were made before treatment was begun. He was in good condition when he arrived, for it was only a few days after his last transfusion. We never saw him in a bleeding phase and do not know his normal fluctuation in clotting time. All three of the determinations made showed a clotting time of about two hours. After treatment was begun, there was a definite lowering of the time, but it never reached normal. He remained with us for only three months and had three definite peaks in the curve for coagulation time. He returned home in August, 1931, and has done very well. He has had no transfusions. On one occasion he fell, knocked out a front tooth and cut his lip. He bled only until a suture was put in. His general improvement has been marked (figs. 4 and 13).

CASE 6.—J. F., aged 7 years, is one of our more recent cases. He came to us last November. The patient and his twin sister, shown in figure 2, formed quite a contrast. He was thin and pale, while she was sturdy and rosy-cheeked. He weighed 52 pounds (23.6 Kg.), and his sister weighed 62 pounds (28.1 Kg.). His clotting time varied between two and three hours, while hers was about five minutes. He has responded unusually well to treatment. His clotting time is now about forty-five minutes, and he has gained 10½ pounds (4.7 Kg.). He and his sister now weigh the same. He has been practically symptom-free during this period.

CASE 7.—J. M., aged 52, is the oldest of our patients with hemophilia, and his history is quite different from that of the others. He did not know that he had hemophilia until he was 45 years of age. As a boy he was normal in every way; in fact, he was athletic. He now recalls a few instances in his early life in Germany when he bled excessively following injuries. As these injuries were rather severe, no special significance was attached to the excessive hemorrhage. At 23 years he had his first involvement of the joints, which was diagnosed as rheumatism. It first affected the small joints of the hands. It was not until after his forty-fifth year that the condition incapacitated him. From then on it became progressively worse. The knees were so badly crippled that walking or even driving a car was impossible. In 1923 his condition was diagnosed as hemophilia by Dr. Jones of Buffalo. The coagulation time was usually about an hour; on one occasion it reached two hours. He was placed under treatment and responded. The spontaneous hemorrhages into the joints ceased, and he has spent a comfortable winter. He is able to walk moderate distances, to drive his car and to attend to business regularly. According to his statement, he has just passed the best winter he has had in many years. The decrease in coagulation time was not so spectacular, as it was not high to begin with. The lowest it ever reached was nineteen minutes; it was usually about forty-five minutes.

It is interesting that the symptoms of hemophilia appeared so late in this patient's life. In the other thirty-four cases the diagnosis of hemophilia was made before the second year, and

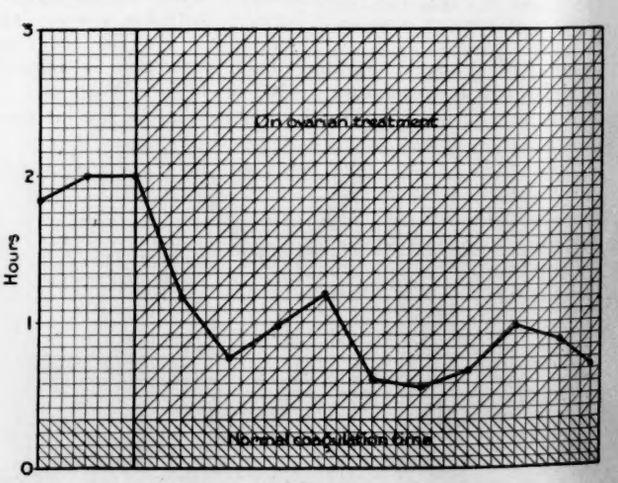

Fig. 13.—Chart showing the coagulation time of J. O., aged 27 months. The clotting time in hours is charted on the vertical line on the left. The dots indicate when the coagulation times were taken; that is, one week apart. The patient came to us in the middle of May, and remained until early in August, 1931. Note that the coagulation curve has three peaks, at the end of May, June and July. The clotting time did not reach normal during this time. The patient has been kept under treatment at home and has had no serious trouble.

in many of them, before the sixth month. This patient had his first symptoms in the joints at the age of 23 years; all of the remaining thirty-four patients had such symptoms before the fifth year. Roughly speaking, the earlier the hemorrhages into the joints appear, the more severe the hemophilia.

CASE 8.—E. L., aged 12, came to us just after a bleeding phase. He has shown marked general improvement following

the institution of treatment. He has gained 13 pounds (5.9 Kg.) in weight and has had but one minor hemorrhage since August, 1931. His coagulation time, however, shows practically the same variation as before he was treated.

One other child, W. U., aged 10, has shown general improvement but little change in coagulation time. Neither of these children was seen by us during a bleeding phase, so we did not get their entire normal variation.

To give more cases would only be repetition. The cases cited represent all of the variations in response to treatment. The majority of the patients showed general and specific improvement. The clotting time was usually reduced one half or one fourth of the original.

BLOOD

The blood of a person with hemophilia is morphologically normal. The red cells and hemoglobin may show a secondary anemia, the degree of which depends on the extent and recency of hemorrhage. The white cells, the polymorphonuclear neutrophils, are increased following confined hemorrhage. The thrombocytes are present in normal number, and their morphology does not differ from the normal. The resistance of the thrombocytes is greatly increased, and, as reported earlier, when the resistance of the thrombocytes is overcome mechanically, the blood clots in normal time (fig. 15). This shows that the prolongation of the coagulation time is due to the increased resistance of the blood platelets. If the clotting time of the blood is in excess of one hour, the red cells settle to the bottom, leaving the blood plasma above. In a general way, the sooner sedimentation begins, the longer the clotting time will be. Roughly speaking, the severity of the hemophilia is in direct proportion to the length of the clotting time. We have seen but one patient with a serious hemorrhage when the coagulation time was below forty-five minutes; patients are relatively safe if the coagulation time does not exceed one hour.

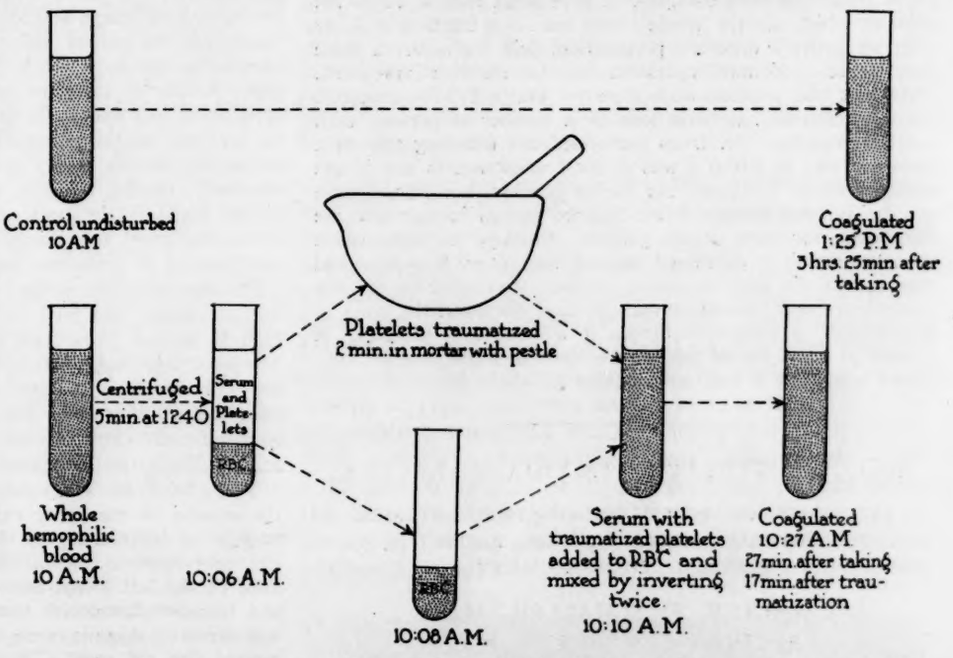

Fig. 15.—Diagram showing the technic used in traumatizing the blood platelets. After the traumatized platelets were added to the red blood cells from which they had been separated, the blood clotted in normal time. A stained smear was prepared of the supernatant fluid after centrifugation, which showed the platelets to be whole. After traumatization another smear was made, which showed that many of the platelets had been ruptured. The control tube in this experiment required three hours and twenty-five minutes to coagulate, while that in which the platelets were traumatized coagulated twenty-seven minutes after the blood was drawn, or seventeen minutes after the traumatization.

The following are other examples of the effect of traumatization: Control tube, one hundred and thirty-one minutes, after traumatization, fifteen minutes; control tube, one hundred and forty-five minutes, after traumatization, ten minutes; control tube, one hundred and ninety-three minutes, after traumatization, nineteen minutes.

SUMMARY

1. During the last two years we have had an opportunity to study thirty-five persons with hemophilia. They range in age from newly born to 52 years. Seven of these cases were sporadic, while twenty-eight had a definite family history.

2. We have traced the histories of twenty families which consist of from four to seven generations. An analysis of these histories shows that persons with hemophilia have more daughters than sons, while transmitters have more sons than daughters. Over 71 per cent of the transmitters' sons had hemophilia. Only from 10 to 15 per cent of the transmitters' daughters had at least one normal son and no hemophiliac sons. Of the hemophiliac daughters, only from 3 to 7 per cent had at least one normal son and no hemophiliac sons.

3. Nineteen patients have been receiving ovarian therapy for more than six months. Nine of these showed a good response, and nine showed definite but less marked improvement, while the condition of one remained unchanged. The response was both general and specific. The general improvement was shown by an increase in weight, hemoglobin and vitality. The specific response was shown by a decrease in number and severity of the hemorrhages and a lowering of the coagulation time.

4. The prolongation of the coagulation time in hemophilia is due to increase in the resistance of the blood platelets, for when this resistance is overcome mechanically, the blood clots in normal time. When certain ovarian preparations are added to hemophiliac blood in a test tube, the coagulation time is decreased to one-fourth or one-half the time of the untouched control.

ABSTRACT OF DISCUSSION

DR. F. J. HECK, Rochester, Minn.: I should like to have Dr. Birch describe her exact method of treatment.

DR. OWEN H. WANGENSTEEN, Minneapolis: I should like to hear Dr. Birch comment on whether these patients can be submitted to the crucial test of being operated on with any degree of safety.

DR. ROBERT KAPSINOW, Lafayette, La.: I am sure I am not the only one here who wants to know more about the treatment of hemophilia. I wonder whether Dr. Birch would give us not only an idea of the course of treatment over a long period of time, but something with regard to her impressions of the use of the different types of ovarian substances.

DR. J. H. WOOLSEY, San Francisco: I would not want to let the opportunity pass without citing an experience of one of my colleagues, Dr. A. A. Bird, of Oakland, Calif. A man, aged 20, from a known hemophiliac family, with a past history of bleeding during minor operations, was given 5 grains (0.325 Gm.) of whole ovary for eight days previous to operation, and his bleeding time reduced from seven and one-half minutes to one and one-half minutes. A deflected septum was removed

without unusual bleeding. Four weeks later, without any further treatment, severe bleeding followed incision into the jaw but was controlled by whole ovary administered for several days.

DR. CARROLL L. BIRCH, Chicago: I have used many different ovarian preparations. I have used theelin, corpus luteum, and whole ovarian substance by Armour and Wilson and Lederle, and a number of other preparations. I have also used fresh pig ovaries, raw and served on toast. I have a long list of preparations left to try. I have obtained my best results so far with whole ovarian substance. I do not believe, however, that this is a final conclusion. No particular part of the ovary has yet been isolated that does as much good as the whole ovary itself. The dosage has varied from 15 to 120 grains (1 to 8 Gm.) daily. I do not think I have gone far enough to make any definite statements that a hemophiliac patient whose coagulation time is five hours requires exactly 90 grains (6 Gm.) of ovarian substance, because some of them respond with less and some require more. What I have usually done is to begin with small doses and increase until the therapeutic result has been obtained. I hope some time to reach the point at which not the whole ovary but some fraction of it, or even an entirely different preparation, will be used. I have done but one abdominal operation on a patient with hemophilia. That was the ovarian transplant to which I have referred. Tooth extraction has been done by a number of persons with excellent results. Dr. Irons performed one not long ago on a patient of his, in which I was of some assistance to him in the management of the case. As far as possible, however, I have avoided surgery because I feel that we can go further than we have gone, for most of the patients, although the coagulation time was definitely decreased, did not come down to normal and stay there. In just seven out of thirty-five patients did the coagulation time remain normal. I have discussed the types of preparation. I have used theelin in a number of patients. It seemed to be of benefit during the bleeding phase, but for continued treatment it was not so good as whole ovary.

ACUTE MYELITIS (MYELOMALACIA)

SYNDROME OF OCCLUSION OF THE ANTERIOR SPINAL ARTERY AT THE FIFTH CERVICAL CORD SEGMENT

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ARCHIE M. ROBERTS, M.D.
AND
EDWARD F. STADTHERR, M.D.
SAN FRANCISCO

Two strikingly similar pictures of cervical myelitis have recently been observed. Although they lack anatomic verification, little doubt exists as to the exact nature and location of the pathologic process, viz., occlusion of the anterior spinal artery at the fifth cervical cord segment with softening in the anterior portion of the cord at and below this segment. Both of the cases occurred in persons of middle age with vascular hypotension but not affected with syphilis. The onset was matutinal; the development of the full-blown picture was rapid. Motor involvement consisted of spastic quadriplegia with local atrophies in the distribution of the lower motor neurons of the affected cord segments. Sensory loss was dissociated; the temperature and pain sensation was disturbed, whereas deep sensibility and the sensation of touch were retained. In both cases, moreover, inversion of the radial reflex (Babinski [1]) confirmed the upper level of the lesion (the fifth cervical segment). It is of significance, also, to note that motion of the diaphragm was preserved in each instance.

Read before the Section on Nervous and Mental Diseases at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Babinski, M.: Inversion du réflexe du radius, Bull. et mém. Soc. méd. d. hôp. de Paris **30**: 185 (Oct. 14) 1910.

REPORT OF CASES

CASE 1.—Mrs. E. B., a nulliparous American widow, aged 42, entered Lane Hospital on Nov. 19, 1930, complaining of paralysis of the trunk and extremities of five months' duration. Except for measles and mumps in childhood and pneumonia in 1919, her previous health was excellent, until November, 1929, when fatigability and failing appetite were noted. In March, 1930, the death of her husband caused considerable emotional upset. The family history was not significant.

On arising on the morning of June 22, the patient felt slightly nauseated and was unable to crumple a piece of paper to light a fire because of weakness of her hands. In a few minutes slight shooting pains were felt in the arms and they became powerless; then a feeling of numbness appeared in the region of the shoulders and spread downward over the body. Within an hour of the appearance of the first symptom there was complete paralysis below the neck. The paralysis was at first flaccid, but after a few days became spastic. During the first five or six days of the illness there were aching pains in the back throughout its length and along the course of the sciatic nerves. Since then the patient had complained of no pain, but a soreness in the region of the left shoulder when she lay on the left side. Ability to raise the head, which was lost, was regained after about two weeks. In three or four weeks there was ability to perform slight movements of the upper extremities, and within six months ability to flex the thighs and knees slightly returned. During the fifth month of the illness, aching pains in the back of the neck and occasional dull cramps in the extremities were experienced. Since the onset there had been incontinence of urine and feces.

On admission, the patient was without discomfort; she was well developed and well nourished. The cranial nerves were entirely normal. The teeth and throat were in good condition. The heart and lungs were clear; the blood vessels were remarkable only for their softness. The blood pressure was 110 systolic and 70 diastolic. The abdomen was slightly distended, tympanitic and extremely spastic. The respiration was diaphragmatic. The patient was alert, cheerful and cooperative.

There were marked weakness, atrophy and flaccidity of all the muscles of the upper extremities, particularly of the small muscles of both hands, of the muscles on the volar surface of the right forearm and on the dorsal surface of the left forearm, of the left biceps and of the right triceps. The trapezii and sternocleidomastoids were normal. The left subscapularis and serratus magnus were atrophied, so that the scapula lay against the rib cage. The muscles of the trunk and lower extremities were spastic and did not respond to volition. There was relaxation of the anal sphincter. The patient was able to perform all motions of the neck, weak flexion at the right elbow and extension at the left elbow. Joint, muscle, vibratory and cutaneous tactile sensibility was preserved throughout. Pain and temperature sensibility was impaired between the fifth cervical and the fourth thoracic segments, and was absent below this level (fig. 1). The jaw jerk was present. The left biceps reflex was more active than the right. There was inversion of both triceps reflexes and of both radial periosteal reflexes. The patellar and achilles reflexes were markedly hyperactive. The corneal reflexes were active; the abdominal reflexes were absent. Hoffmann's sign was absent. The Babinski, Oppenheim and Gordon signs were markedly positive bilaterally. Sustained patellar and ankle clonus was readily induced. Electrical testing of the muscles of the upper extremities gave a reaction of degeneration in all the affected muscles except the right biceps and the forearm musculature, where there was elevation of the threshold.

There were 4,650,000 red blood cells, 72 per cent hemoglobin (Sahli) and 7,450 leukocytes, with a normal distribution. Except for the presence of enormous numbers of pus cells, the urine was not remarkable. The Wassermann reaction of the blood was negative to all antigens. The spinal fluid pressure was 16 cm., with an immediate response to jugular compression and a ready fall on release. Nonne and Noguchi tests gave negative results; a Wassermann test gave negative results; the colloidal gold curve was 1122100000. The total protein was 43 mg. per hundred cubic centimeters; the sugar, 64 mg. The electrocardiograms were normal. Roentgenograms of the cer-

vical and thoracic areas of the spine were normal. The left scapula was seen to be more anterior than normal.

The patient remained in the hospital under treatment until Oct. 27, 1931. She received physical therapy in the form of electrical stimulation and massage to the upper extremities, hyperpyrexia by means of hot baths and ephedrine by mouth.

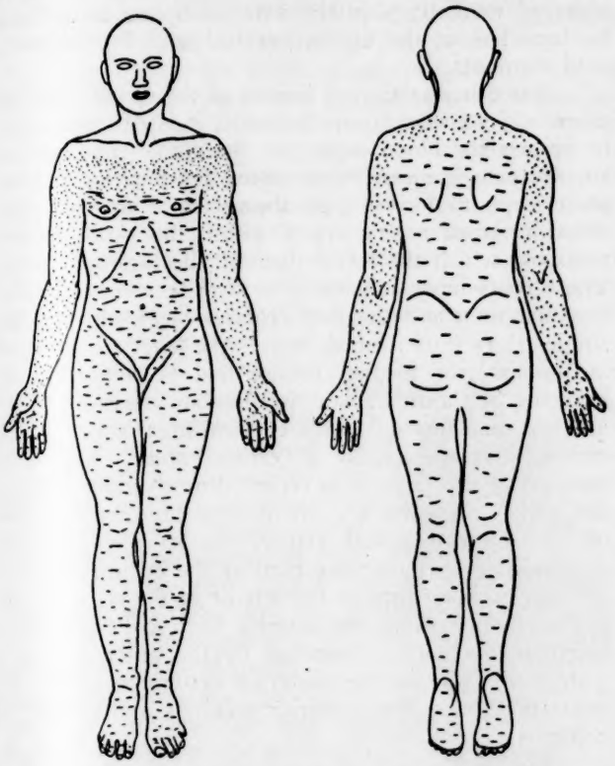

Fig. 1 (case 1).—Cutaneous sensory disturbances to pain and temperature. Impaired: dots. Loss: Dashes.

On October 22, there were noted fibrillary contractions in the tongue, the left trapezius and the deltoids. Otherwise, except for the development of moderate contractures in the hands (fig. 2), there had been no significant change in the picture.

CASE 2.—Mr. W. F. J., an American clerk, aged 42, divorced, entered the Southern Pacific Hospital on Nov. 14, 1928, complaining of stiffness of the muscles of the trunk and extremities of three and one-half months' duration. Measles in childhood, gonorrhea at 18, pneumonia with pleurisy at 19, and malaria at 22 were noted as previous illnesses. At the age of 12 years his left upper eyelid began to droop, and he would see double on turning his head quickly. Convergence had always been difficult. The family history was entirely irrelevant.

In August, 1928, the patient awoke one morning with a feeling of stiffness in his arms, legs and trunk, and was unable to move any part of his body except the head and neck. Speech and swallowing were performed with difficulty. Voiding was impossible, catheterization being necessary on the first day of the illness. After three weeks some use of his left arm was regained, and later of his right arm and both legs.

On admission, the patient was pale and poorly nourished. Except for a dilated fixed right pupil and a slight irregularity of the left pupil, the head and neck were not remarkable. A few coarse râles were heard in both lower lung fields posteriorly. The heart and peripheral blood vessels were normal. The blood pressure was 110 systolic and 70 diastolic. The abdomen was not remarkable. The gait was slow and uncertain; the Romberg sign was negative. Finger-to-finger and finger-to-nose tests were poorly executed. There was generalized weakness of the muscles of all the extremities, with atrophy of the interossei of both hands and of the hypothenar group on the right. The hands were of the "obstetric" type. Cutaneous sensibility to pain and temperature was diminished below the clavicles (fig. 4). Joint, muscle, vibratory and tactile sensibility was intact. The biceps, triceps, radial periosteal, patellar and achilles tendon reflexes were hyperactive and equal. There was inversion of the right radial periosteal reflex. The corneal, abdominal and cremasteric reflexes were present and active.

There were 4,500,000 red blood cells, 75 per cent hemoglobin (Sahli) and 8,600 leukocytes. The Wassermann reaction of the blood was negative. The spinal fluid pressure was 21 cm., with an immediate response to jugular compression and a rapid return to the previous level on release. The fluid contained 2 cells; Nonne and Noguchi tests gave negative results; the Wassermann reaction was negative; the colloidal gold curve was 0000000000. The blood sugar was 103 mg.; urea nitrogen, 10 mg.; creatinine, 1.2 mg.; nonprotein nitrogen, 29 mg.; calcium, 11 mg., and potassium, 21.4 mg. per hundred cubic centimeters.

Roentgen examination of the skull and sinuses gave negative results; that of the spine showed slight scoliosis in the thoracic area and chronic hypertrophic arthritis with lipping of the bodies of several of the lumbar vertebrae; that of the teeth showed areas of rarefaction at the apexes of three teeth.

Three months after the onset of his illness the patient was able to get around quite well, but he was afraid that his legs would "give way" and let him fall hard because he could not protect himself well with his hands and arms. His fingers were so stiff that he could not perform fine movements. There was paresthesia of "pins and needles" in his hands. He was particularly sensitive to heat and cold, and felt that his sense of touch was unusually keen.

A case quite similar to the two reported was published in 1927 by Grinker and Guy.[2] Their patient, a boy of 15 years, on arising from bed, yawned and stretched his arms upward, outward and backward. There followed an audible crack accompanied by a sharp pain in the lower part of his neck. Within two hours signs of a transverse cord lesion developed at the fifth cervical segment. The skin area supplied by the second to the fourth cervical segments was hyperesthetic. Pain and temperature sensibility was lost below this level. Complete anesthesia, except for a small area on the right ankle and on the toes of the left foot, was present below the first lumbar segment. Deep sensibility was preserved in the soles of both feet. There was marked weakness of all the muscles of the upper extremities

Fig. 2 (case 1).—Atrophy and contracture of the hands fifteen months after the onset.

with complete paralysis of the small muscles of the hands and weakness of the trunk and lower extremities. Deep and superficial reflexes were absent, save for weak responses of the triceps and biceps. These findings persisted until the patient's death five weeks later

2. Grinker, R. R., and Guy, C. C.: Sprain of Cervical Spine Causing Thrombosis of Anterior Spinal Artery, J. A. M. A. 88: 1140 (April 9) 1927.

Pathologic examination showed softening of the spinal cord at the fifth and sixth cervical segments and occlusion of the anterior spinal artery by a hyalinized thrombus opposite this level.

In 1923, Margaretten [3] described a like case in a man, aged 49, with serologic reactions indicative of syphilis and with the history of a chancre twenty-five years

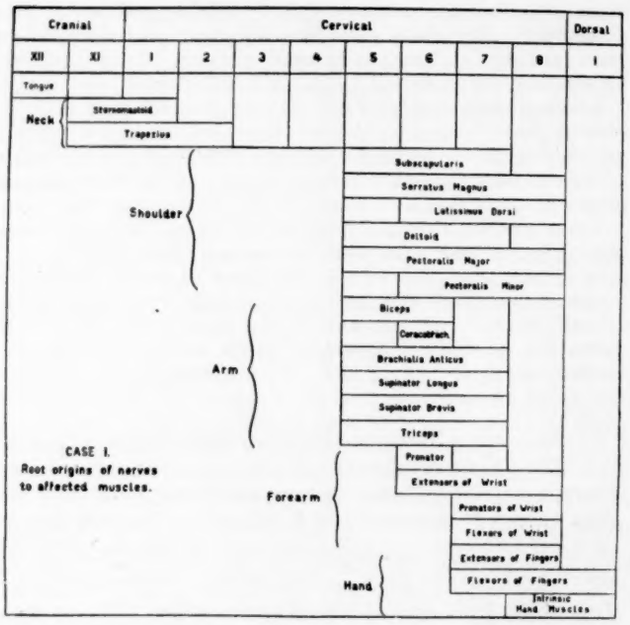

Fig. 3 (case 1).—Radicular diagram of the involved muscles.

before. Progressive weakness of both hands developed, affecting principally the muscles supplied by the ulnar nerves. There were weakness and atrophy of the small muscles of the hands and of the extensor groups on each forearm. Pyramidal tract signs were present in the lower extremities. No anatomic examination was had, but the condition was considered clinically to be a transverse myelitis with softening due to thrombosis in the anterior spinal artery affected by syphilis.

Spiller's [4] case, recorded in 1909, occurred in a man of 45 years who had recovered four years previously from an illness resembling meningitis. The disease began with a sensation of cold and pain between the shoulders, which came on about fifteen minutes after he had helped to lift four 100 pound blocks of ice. There were gradually increasing stiffness and weakness of all the muscles of the trunk and extremities. Generalized paralysis, with hypalgesia between the fourth and sixth cervical segments, urinary retention and fecal incontinence were present by the third day. Marked regression occurred, so that at the end of two months the patient was able to walk and to perform slight motion of the right shoulder. Pyramidal tract signs (spasticity, exaggerated deep reflexes, clonus and Babinski sign) developed in the lower extremities, particularly on the left. Pain and temperature sensibility was impaired between the fourth cervical and the sixth thoracic cord segments, but deep sense and touch were not disturbed. Breathing remained largely diaphragmatic. The cranial nerves were normal, except that the right pupil was larger than the left. The fingers of the right hand became fixed in flexion; those of the left hand, in extension. Death occurred three years after the onset of the illness. Anatomic examination showed softening between the fourth cervical and the third dorsal segments of the spinal cord with partial occlusion of the anterior spinal artery in the lower cervical region. Microscopic examination demonstrated the presence of areas of thrombosis in the anterior spinal artery and its branches in the eighth cervical and first thoracic cord segments.

In this consideration of lesions of the spinal cord due essentially to vascular disturbance, it is of importance to discuss the blood supply to the cord. The arterial supply is made up of two systems, the anterior and the posterior, both derived from the vertebral arteries. The anterior spinal artery arises within the skull by two roots, of which the left is usually the larger (fig. 5). These roots unite at a variable level between the foramen magnum and the third cervical segment, and the single artery thus formed courses the length of the cord at the anterior median fissure and is reinforced by branches of the intercostal and lumbar arteries. There are few anastomoses in the cervical area, a fact which makes this theoretically a "critical area." Clinically, however, acute myelitis is reported much more often in the lower dorsal levels. About three hundred branches of the anterior spinal artery, the so-called anterior median arteries, enter the cord at the commissure and without dividing turn to the left or to the right to supply the commissures, the anterior horn and the anterior third of the cord. Branches of the anterior system join with those of the posterior system to supply the posterior horns, the posterior columns and the lateral columns.

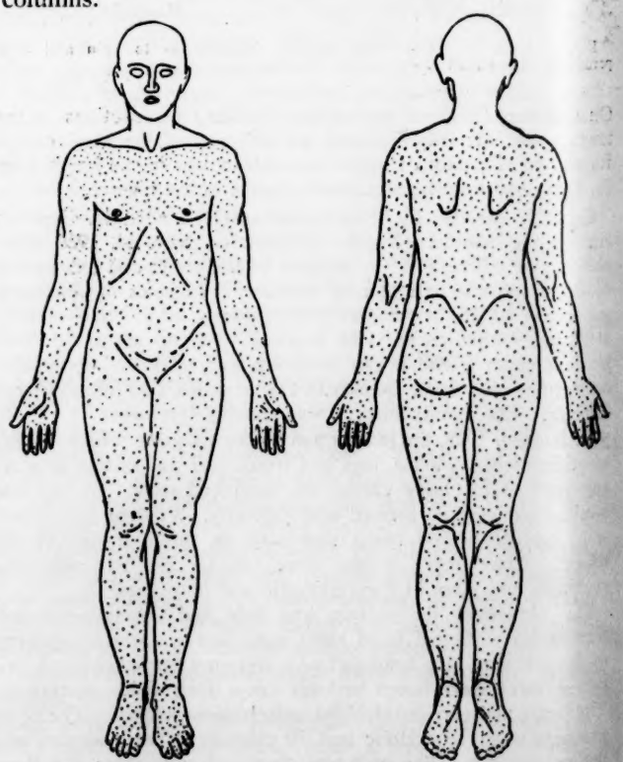

Fig. 4 (case 2).—The dotted areas denote impaired pain and temperature sensation.

The dual blood supply to the posterior two thirds of the cord, the two posterior spinal arteries with their free interbranching, seems to protect this portion of the cord from ischemia quite efficiently. In the absence of compression, a complete transverse lesion is uncom-

3. Margaretten, L.: Syndromes of the Anterior Spinal Artery, J. Nerv. & Ment. Dis. **58**: 127, 1923.

4. Spiller, W. G.: Thrombosis of the Cervical Anterior Median Spinal Artery: Syphilitic Acute Anterior Poliomyelitis, J. Nerv. & Ment. Dis. **36**: 601, 1909.

mon, the posterior columns being spared at least in part. Deep sensibility and touch, therefore, are generally preserved, whereas pain and temperature sense, which is carried along tracts that cross through the commissures and ascend in the anterolateral part of the cord, is often affected. The gray matter at the level of the lesion suffers the greatest damage. The pyramidal tracts are frequently involved.

Vascular occlusion in the spinal cord, as in the brain, is much more common than hemorrhage. It is, in fact, the most frequent cause of rapidly developing lesions of the cord. In many instances the occlusion occurs in vessels already damaged by preexisting disease, of which syphilis or arteriosclerosis is the usual cause. Often, however, the vessels themselves appear healthy and thrombosis is the only abnormality. Again, as in the brain, there is great variation in the degree and extent of the lesion. The uncommon syndrome of "intermittent claudication of the spinal cord," first described by Dejerine,[5] presumably is analogous to the "slowing of the cerebral circulation" pointed out by Inman.[6] In this connection it is suggested that the moderate hypotension observed in the two cases herewith reported was a factor in the production of the disease. The characteristic acute myelitis involving more or less of the horizontal area of the cord may be taken as corresponding to the ordinary "stroke" due to softening of the brain.

Fig. 5. — Anatomic dissection, illustrating the origin of the anterior spinal arteries from vertebral arteries and their confluence between the second and third cervical segments.

Acute myelitis is not a progressive disease. It reaches its height within a few hours and tends thereafter toward gradual improvement. In fatal cases, death comes after several weeks from septic urinary infection or decubitus ulcers. In our first case, the suggestive later involvement of the lowest cranial nerves probably represented a similar occlusive process in the vertebral branches to the medulla. Myelomalacia more commonly describes the pathology of vascular occlusion, but acute myelitis is the term generally employed clinically and has been used in this article because of common usage and references to the literature.

SUMMARY AND CONCLUSIONS

Two cases of acute myelitis illustrating the syndrome of occlusion of the anterior spinal artery at the fifth cervical cord segment have been recorded. The circulation of the spinal cord has been discussed.

Extensive acute myelitis occurring in the lower cervical cord segments produces a definite clinical picture: flaccid paralysis of the upper extremities with subsequent atrophies and contractures, spastic paralysis of the trunk and lower extremities and impairment of pain and temperature sensibility below the level of the lesion.

5. Dejerine, J.: Sur la Claudication intermittente de la moelle epinière, Rev. neurol. **14**: 341, 1906.
6. Inman, T., in Osler, William: Principles and Practice of Medicine, ed. 10, New York, D. Appleton and Company, 1926.

ABSTRACT OF DISCUSSION

DR. EDWIN G. ZABRISKIE, New York: Upon receipt of invitation to participate in this discussion I looked up the diagnoses in the Neurological Institute since 1919 and this diagnosis was made twice out of fifty cases where diagnosis of spinal cord disease was made due to arterial or vascular disorder. I should like to make some comments on the question of the Babinski inversion of the radial reflex as a localizing sign of a lesion of the fifth cervical segment of the spinal cord. It is difficult for me to accept this, particularly in view of the authors' two cases, because the clinical evidence showed just as much, if not more, invasion of the eighth thoracic and higher segments, and yet the persistence of the flexion of the fingers was recorded whereas the biceps reflex was lost, particularly in one case in which the electrical reactions of the right biceps were present and not only showed, I believe, a partial reaction to degeneration but the biceps contraction was lost. I have no explanation for this, but it seems to me that these two cases would cast doubt on the reliability of this inversion of the radial reflex as a localizing sign of a lesion of the fifth cervical segment.

DR. EDMUND MCCOLLAM CONNELY, New Orleans: In looking through the literature one finds surprisingly few cases of this condition. As the authors have said, since Spiller reported his case in 1909, only one other case was found, that of Drs. Grinker and Guy, in which the observation was confirmed by autopsy. The pictures of the authors' patients are complete and certainly conform to the pictures one gathers in looking through the literature. I was interested to note that the authors did not find any evidence of syphilis. In 1931 Austin reported two cases in which there was no apparent evidence of syphilis, and in the case of Drs. Grinker and Guy also there was apparently no evidence of syphilis. That is not in accord with Spiller's original idea, I believe, nor is it in accord with some of the other authors. Drs. Grinker and Guy had the rather unusual feeling that the condition was due to trauma. Drs. Schaller, Roberts and Stadtherr felt that possibly the low blood pressure had something to do with the condition. Of course, not finding syphilis does not rule it out absolutely, and possibly the combination of the low blood pressure with some disease of the vessels may have been the cause of the lesion. The Grinker-Guy case was quite unusual and they felt there had been a dislocation of the vertebra. In the cases of Drs. Schaller, Roberts and Stadtherr there was no history of any injury.

DR. WALTER F. SCHALLER, San Francisco: Dr. Zabriskie brings up an interesting point regarding the inversion of the radial reflex. I might say that, as this reflex existed in the upper extremitites on both sides in the woman and on one side in the man, its presence was confirmatory of the sensory and motor localization at the fifth cervical segment. The presence of biceps action and the biceps reflex would not be incompatible, in my opinion, with the absence of the normal radial periosteal reflex. In this regard I would refer to the absence of tendon reflexes in poliomyelitis with frequent conservation of mucsular function and their peristence in cases of amyotrophic lateral sclerosis with marked atrophy. We feel that hypotension is the most reasonable causative explanation of the syndrome. There was no clinical or serologic evidence of syphilis in the woman, and although the eye signs may have indicated previous syphilitic injury in the man, the low blood pressure appears to have been the deciding factor. I think it important to stress treatment in cases of suspected occlusion of the anterior spinal artery. By attempts to raise the blood pressure these patients may be carried over the critical point of their circulatory balance, namely, by reclining posture, bandaging of the extremities, application of an abdominal binder, administration of ephedrine, digitalis, and circulatory stimulants, and by the forced administration of liquids. The condition in the cord is similar to conditions of slowed and imperfect brain circulation, in which one may reestablish, in some cases, adequate circulation by timely and appropriate treatment.

EXPERIMENTALLY PRODUCED PEPTIC ULCERS

DEVELOPMENT AND TREATMENT

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Studies on peptic ulcer from several points of view attest its widespread distribution among persons in all conditions of life. The significance of this lesion lies not only in the danger to life which its presence threatens, but to its incapacitating effect on the enjoyment of life and on the maintenance of normal activities. For these reasons the subject of peptic ulcer is worthy of investigation, including that of experimental research. Although the practical aspect of the results of experimental investigation on peptic ulcer is questionable, one cannot doubt that its ultimate value will be justifiable. It is our purpose to review briefly some of our experimental work which appears to offer a possibility of being significant in the future of clinical medicine. The nature of our paper necessitates limiting references to other experimental work which is pertinent to our investigation. A recent complete review of the literature on experimentally produced peptic ulcer has been made by McCann.[1]

From the anatomic and physiologic standpoints, the usual situation of peptic ulcer is of the greatest significance. These typical ulcers occur mainly in that portion of the gastro-intestinal tract which can be exposed to an acid medium, and which appears to be subjected to the greatest mechanical trauma by the passage of the gastric contents. From the clinical standpoint it is of significance that practically all of the numerous methods, both medical and surgical, that have been devised to treat the patient with peptic ulcer have for their main object the protection of the lesion from chemical or mechanical injury. These facts have been the determining factors in directing our experimental approach to the problem. It should also be noted that at present there is no one best method of treating peptic ulcer either medically or surgically.

Acute gastric or duodenal ulcer has been produced experimentally by numerous methods, but the subacute or chronic ulcer has rarely been produced in animals. We shall present a review of the results of investigations carried out in our laboratory over a period of years on experimentally produced peptic ulcer. The lesion we have studied simulates both macroscopically and microscopically peptic ulcer as seen in man. We have determined some of the factors responsible for its causation. We have been able to observe the development of the lesion from its incipiency to its maturity when it had become a typical chronic peptic ulcer as seen in man. We have also been able to make the chronic lesion heal and to observe the process whereby it heals. The studies have given us a clear, composite picture of the entire life cycle of the experimentally produced peptic ulcer.

TYPES OF ULCER PRODUCED EXPERIMENTALLY

Two types of ulcerative lesions of the gastric and duodenal mucosa have been produced experimentally. The ulcerative type most often produced has always remained acute; it is usually multiple and is more often distributed throughout the mucosa of the fundus than in the mucosa of the pylorus or duodenum. The exact site of occurrence of the lesions is never definite or constant. They start as a hemorrhage in the submucosa, and the lesion of the mucosa appears secondary to the vascular injury. This type of lesion is readily produced experimentally by various means. It occurs in the so-called toxic conditions, after the injection of toxins, certain drugs and bacteria, and in some moribund conditions that follow the loss of the adrenal and parathyroid glands, as well as after section of the splanchnic nerves and other operative procedures. In our experience this type of ulcer is always acute. If the animal survives the procedure which was accompanied by the development of the ulcer, healing always occurs, and no trace of the lesion remains. The other type of ulcer is the one that we have observed more commonly. The conditions under which it develops are definite and limited. The ulcer is usually single, although two or, rarely, three (hardly ever more) ulcers may be present at one time. The site of the lesion is in the pathway of the outflow of gastric contents; it is never in the fundus. The exact site of its development is definite and constant. It starts on the surface of the mucosa as a grayish, circumscribed membrane. At first it is saucer-shaped, and later the usual appearance of peptic ulcer as seen in man develops. In the beginning the lesion is acute, but if perforation with peritonitis or fatal hemorrhage does not occur, it quickly becomes chronic. Grossly and microscopically, this type of lesion resembles peptic ulcer as found in man.

Whether either of these two types of lesions corresponds to the type seen in man has not been determined, owing to the fact that the process of development of the lesion in man has not been determined. If the mucosal lesion in man which precedes the development of the characteristic chronic peptic ulcer begins as a hemorrhage into the submucosa, it would appear that many of the results of our investigations would have little, if any, clinical bearing. On the other hand, if the lesion in man begins at the surface of the mucosa, the type of lesion we have studied would appear to be the only type of experimentally produced ulcer that may be of clinical significance.

METHODS OF PRODUCING ULCER

The first experiments had for their objective the elimination of the duodenum with the protective mechanism of the duodenal mucosa and secretion. The duodenum was completely removed; a loop of the first portion of the jejunum was placed in the position previously occupied by the duodenum; the pylorus was anastomosed to the jejunum, and the common bile and pancreatic ducts were transplanted into the loop of jejunum. In about 20 per cent of the animals thus operated on, chronic peptic ulcers developed in the jejunum just distal to the pylorus.[2]

The second series of experiments had for its purpose the elimination of the secretions poured into the duodenum by the glands extrinsic to the gastro-intestinal tract, the liver and pancreas. The ducts draining these secretions, the common bile duct and the pancreatic ducts, were transplanted into the terminal ileum. In about 50 per cent of the animals thus operated on, peptic

From the Division of Experimental Surgery and Pathology, the Mayo Foundation.
Read before the Section on Gastro-Enterology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. McCann, J. C.: Experimental Peptic Ulcer, Arch. Surg. **19**: 600 (Oct.) 1929.

2. Mann, F. C., and Kawamura, K.: Duodenectomy, An Experimental Study, Ann. Surg. **75**: 208 (Feb.) 1922.

ulcer developed in the duodenal mucosa at the usual site for the development of duodenal ulcer in man.[3]

Finally, the entire normal mechanism for receiving the acid gastric contents was eliminated by the functional resection of the duodenum together with the secretion poured into it. This was accomplished in the following manner: The pylorus was sectioned and the distal end inverted; the jejunum was transected a few centimeters distal to the ligament of Treitz; the distal end was anastomosed to the pylorus, and the proximal end was anastomosed to the ileum from 30 to 60 cm. from the termination of the latter. These procedures caused the gastric contents to be expelled from the stomach into the jejunum without becoming mixed with the secretions poured into the duodenum, the bile, the pancreatic juice and the duodenal juice, which are drained into the ileum. Furthermore, the possible protective mechanism of the duodenal mucosa was eliminated by the substitution of jejunal mucosa. This operative procedure was carried out in our laboratory several hundred times in various investigations on peptic ulcer, and ulcer developed in about 95 per cent of the experiments. These results have been confirmed by other investigators employing this method.[4]

More recently, Goldberg,[5] and Harper,[6] in our laboratory, studied the development of ulcer produced by another method. A gastric fistula was made according to the method described by us.[7] That is, a short loop of intestine was isolated; the distal end was anastomosed to the fundic portion of the stomach, and the proximal end was drained to the outside. Later, a pouch was made of the fundus drained by the loop of intestine.[8] Following this procedure, peptic ulcer developed in the intestinal mucosa just distal to the gastric stoma in a high percentage of instances.

We have grouped the various methods that we have found successful in producing peptic ulcer, because we believe that the type of ulcer produced and the factors responsible for their development are similar. In all experiments the ulcer begins in the same manner, namely, at the surface of the mucosa as previously described. The ulcer is always situated in the pathway of emergence of the gastric contents from the stomach and apparently at the site where this gastric content first impinges on being discharged from the stomach. Grossly and microscopically the lesions resemble the peptic ulcer that is seen in man.

ACIDITY

It should be noted that each of the methods described, which are so productive in producing peptic ulcer experimentally, has as its main objective the diminution or elimination of the mechanism of neutralization of the gastric contents as they pass from the stomach. The fact that subacute or chronic ulcers developed so readily under such experimentally produced conditions, in spite of the fact that it has been difficult to produce the lesion experimentally by other methods, indicates that so far as the ulcers we are studying are concerned acidity is an important factor in causation. It was thus desirable to know definitely the changes in the p_H of the gastro-intestinal tract with particular reference to the variations occurring at the pylorus or at the ulcer-bearing area. We have made extensive observations on this problem, and a portion of our data has been published.[9] Some of these investigations are pertinent to our subject.

By making fistulas in various portions of the gastro-intestinal tract according to the method previously mentioned, it was possible to obtain specimens from various regions of the stomach and intestine and estimate the changes in p_H occurring in the various regions and after different diets. It was found, as would be expected, that the gastric contents were usually acid, and that the contents of the intestine were slightly alkaline or neutral. The most significant observation in relation to the formation of ulcer was the wide range of changes in p_H occurring at the pylorus and the beginning of the duodenum, where the p_H might vary from 2 to 7 within a very short time. Evidently the ulcer-bearing area of the gastro-intestinal tract is subjected to the widest range and quickest changes in the p_H of any region. It is the site where the onrushes of acidity

Experimental peptic ulcer six months after the physiologic removal of the duodenum. This lesion does not appear greatly different from the same ulcer when observed by exploratory laparotomy five weeks, three months and five months after operation.

produced in the fundus are met, diluted, neutralized and buffered for acceptance by the intestine.

The changes in acidity to which the intestinal mucosa at the pylorus is subjected, in the absence of the normal mechanism for neutralizing the acid of the gastric contents that pass the pylorus, are graphically illustrated by some experiments of Wu.[10] He made a jejunal fistula just distal to the site of section in the operation we usually perform for the production of ulcer. He found that the p_H of the jejunal contents at this point with a normal gastro-intestinal tract ranged between 6.27 and 8.28 after various meals, with the extremes of 4.66 and 8.35 rarely occurring. The normal jejunal mucosa was subjected to contents with a p_H slightly on the acid side for only short periods. After drainage of the secretions poured into the duodenum and into the ileum, and the anastomosis of the jejunum a few centimeters distal from the fistula opening to the pylorus, that is, the substitution of the jejunum for the duodenum without the normal contents of the latter, the p_H ranged between 1.71 and 8.33. These experiments showed that the mucosa in which we have been producing ulcers was subjected to

3. Mann, F. C., and Williamson, C. S.: The Experimental Production of Peptic Ulcer, Ann. Surg. **77**: 409 (April) 1923.
4. Ivy, A. C.: Personal communication to the authors. Ravdin, I. S.: Personal communication to the authors. Weiss, A. G.: Ulcères chroniques gastroduodénaux expérimentaux crées par la dérivation des sucs alcolins duodénaux, Strasbourg-méd. **90**: 549-552 (Sept. 15) 1930.
5. Goldberg, S. L.: A Method of Producing Peptic Ulcer Experimentally, to be published.
6. Harper, F. R.: A Study of the Development Acidity Changes and Treatment of Experimental Peptic Ulcer (unpublished data).
7. Mann, F. C., and Bollman, J. L.: A Method for Making a Satisfactory Fistula at any Level of the Gastro-Intestinal Tract, Ann. Surg. **93**: 794 (March) 1931.
8. Goldberg, S. L., and Mann, F. C.: Preparing Pouches of the Fundus of the Stomach, Ann. Surg. **94**: 953 (Nov.) 1931.
9. Mann, F. C., and Bollman, J. L.: The Reaction of the Content of the Gastro-Intestinal Tract, J. A. M. A. **95**: 1722 (Dec. 6) 1930.
10. Wu, P. P. T.: Acidity Changes at the Pylorus in Experimental Peptic Ulcer (unpublished data).

contents with a p_H on the acid side most of the time, and that at intervals the acidity was marked.

We have seen that the incidence of the formation of ulcer after the elimination of the most important factors maintaining the normal reaction of the duodenal contents, the duodenal mucosa and secretion, the pancreatic juice and bile, suggested that all of these factors appeared to be of significance in preventing the formation of ulcer. That is, ulcer occurred in the highest percentage of cases in which all of these factors were eliminated, but ulcer also occurred in a lower percentage when part of them were eliminated. In order to determine whether there was a correlation between the incidence of development of ulcer after the elimination of these various factors composing the neutralized mechanism and their approximate value in lowering the acidity of the gastric content as it leaves the stomach, our associates (Harper, Wu, McRoberts, Hoerner and Imes) have carried out a series of investigations on the changes of the p_H of the duodenum at the pylorus before and after elimination of these factors.

The general procedures in these experiments were the same. A duodenal fistula was made, and the changes in p_H were estimated after various types of meals. The results of these observations furnished the control data. In one series of experiments, after preliminary data were secured, McRoberts [11] drained the bile to the outside, and the preoperative observation was repeated. It was found that there is very little change in the p_H of the duodenal contents following fasting and after various types of meals before and after the production of a biliary fistula, with the exception of a fat meal. The p_H is maintained for a much longer period toward the acid side following a fat meal when the bile is diverted from the duodenum. In another series of experiments, after the preliminary observations, the pancreatic ducts were evulsed by Hoerner [12] so that pancreatic juice could not enter the duodenum. It was found that the acidity of the duodenal content was greater and was maintained longer after the elimination of the pancreatic secretion. After the normal changes in p_H of the duodenal content had been found by Imes,[13] the duodenum was isolated from the main gastro-intestinal stream by section of the pylorus, and the duodenal end was closed and the jejunum anastomosed to the pylorus. It was found that the p_H and the buffering value of the combined secretion poured into the isolated duodenum remained remarkably constant. Evulsion of the pancreatic ducts did not change the p_H of the contents of the isolated duodenum, but reduced the buffering capacity about one-third.

In order to determine the part that the duodenal mucosa might play in the development of ulcer, we transplanted loops of duodenum, jejunum and ileum to the point of emergence of the gastric contents in experiments in which the secretions poured into the duodenum were drained into the ileum. The duodenal mucosa was found to be the most resistant to the formation of ulcer; the mucosa of the ileum the least resistant, and the jejunum was intermediate between the two. Harper,[6] employing a fundic pouch drained by a loop of intestine from the three main regions of the intestinal tract, obtained similar results.

It may be seen from these observations that the incidence of the formation of ulcer roughly parallels the changes in the p_H after the elimination of the various agencies which dilute, neutralize or buffer the gastric contents after they are expelled from the stomach. These data also permit a rough estimate of the relative value of the duodenal mucosa and secretion and of the bile and pancreatic secretion in the prevention of peptic ulcer. The duodenal mucosa and secretion are probably of the most importance; the bile is of the least importance, and the pancreatic secretion is intermediate between the two. The high resistance of the duodenal mucosa to those agencies which readily produce ulcer in the mucosa of the jejunum and ileum has been commented on. In this connection it should be noted that the development of peptic ulcer in animals with bile fistula is an infrequent occurrence unless jaundice is present. Although the pancreatic secretion appears to be of great significance in preventing ulcer, its lack can readily be compensated for; in our experience ulcer rarely occurred in the depancreatized animal or after evulsion of the pancreatic ducts.

The part acidity plays in the production of these ulcers is shown clearly by some of Harper's experiments. He anastomosed loops of intestine to fundic, pyloric and cardiac pouches. Ulcer occurred in almost every instance in the intestinal loop attached to the fundic pouch when the content passing through it was acid, but ulcer did not occur in the loops draining the pyloric or cardiac pouches in which the content is only rarely slightly acid.

It may thus be seen that in all of our studies of peptic ulcer the acid factor has appeared to predominate, and we do not feel that the significance of this factor can be overestimated. Therefore, it seemed desirable to determine the effect of the administration of acid to normal dogs in regard to the formation of ulcer. At present we are continuing some experiments which seem to add considerably to the concept that acid is instrumental in the formation of ulcer. We have been able to produce chronic gastric ulcers by the administration of hydrochloric acid into the stomach of dogs. In the animals used for these experiments gastric fistulas to the abdominal surface were constructed by our method, and the gastro-intestinal tract was not otherwise disturbed. The animals were trained to lie quietly with a catheter passing into the stomach through the fistula. By means of a continuous drip apparatus, 0.4 per cent of hydrochloric acid is instilled into the stomach at a rate of less than 1 cc. each minute for a period of about eight hours each day, after which the animals are returned to their cages and allowed food and water. The animals remain in good condition for about two weeks and then begin to lose weight rather rapidly, apparently at the time at which the ulcer develops. In about four weeks a subacute or chronic-appearing gastric ulcer may be found not far from the line of the lesser curvature of the stomach. The acid used in these experiments was not as strong as may be found in the course of normal digestion, but considerably more free hydrochloric acid may be present. The amount of acid administered is less than Dragstedt and Ellis [14] found to be the normal daily secretion of the stomach, and does not appear to be sufficient to influence greatly the acid base equilibrium of the blood, since no significant differences in the carbon dioxide-combining power of the blood are found at the beginning and end

11. McRoberts, J. W.: The Reaction of the Duodenal Contents in Bile Fistula Animals (unpublished data).
12. Hoerner, N. T.: The Reaction of the Duodenal Contents After Evulsion of the Pancreatic Ducts (unpublished data).
13. Imes, P. R.: The Reaction and the Buffering Values of the Contents of the Isolated Duodenum (unpublished data).
14. Dragstedt, L. R., and Ellis, J. C.: The Fatal Effect of the Total Loss of Gastric Juice, Am. J. Physiol. **93**: 407 (June 30) 1930.

of the experiment, and there have been no symptoms of acid intoxication.

Although the acid produced peptic ulcers, other features of the process appear to be of greater significance. It was soon discovered that much larger quantities of acid could be administered to animals that had taken a small amount of food prior to the onset of the continuous administration of acid. In these animals the free hydrochloric acid was rapidly neutralized. A few minutes after the instillation of the acid was discontinued, free hydrochloric acid in the stomach was found to be reduced to below the level present during normal digestion. This neutralization was more than that caused by the buffering action of the food present, since it occurred with almost equal rapidity after the aspiration of the gastric contents. These observations appear as additional evidence of the presence of an active process of neutralization during the course of digestion. In the fasting animal neutralization of the hydrochloric acid also occurred, but it appeared to be definitely slower, especially after the first hour or two of the administration of acid. The fasting animals appeared to be disturbed by the acid, emesis frequently occurring after two or three hours. From these experiments it would appear that the factors of alkalinization are more active in reducing excess acidity during digestion than in the fasting state.

Another observation appears to indicate that daily repetition of excess acidity depresses the neutralizing ability. Like many other investigators, we have been unable to produce lesions by the single administration of a large amount of acid given by stomach tube at repeated intervals. If large amounts of acid were given, almost immediate emesis removed most of it, and that retained was rapidly neutralized. On repetition of a single dose of acid, the animal was apparently completely recovered from the previous experience, so that on the second administration it was in the same condition as in the beginning. The method of continuous administration of acid, although never severe, does not allow any rest for the neutralizing mechanism, and in time seems to exhaust this process.

The first few days of the continuous administration of acid are without demonstrable effect, but with its continuance the animals begin to appear disturbed and emesis may occur after several hours of administration of acid. After several days this disturbance appears earlier. The apparent exhaustion of neutralizing ability does not seem to be related to the acid-base equilibrium of the body, as indicated by the carbon dioxide-combining power of the blood, and ample provision in the diet was made for alkalis in excess of the amount of hydrochloric acid administered.

In these experiments, after an ulcer has developed, the neutralizing power of the stomach toward the continuous administration of acid is markedly reduced, and the duration of the administration must be reduced accordingly. The administration of acid in the presence of ulcer creates considerable disturbance, emesis being frequently produced after the administration of only a few cubic centimeters of dilute hydrochloric acid. Similar observations were made by Dragstedt and Palmer [15] in man. Peptic ulcer produced in this way will begin to heal in a few days following the discontinuance of the acid. The healing process appears to be similar to that described. Short periods of administration of acid may greatly retard healing and produce extension of the ulcer. It would appear that one short period of hyperacidity may delay the healing of ulcer for as long as a week.

15. Dragstedt, L. R., and Palmer, W. L.: Direct Observations on the Mechanism of Pain in Duodenal Ulcer, Proc. Soc. Exper. Biol. & Med. 29: 753 (March) 1932.

MECHANICAL FACTORS

Although acidity is of the utmost significance in the development of these ulcers the mechanical factors are also of great significance. We shall review briefly the most pertinent facts forcing us to this conclusion: The site of development of the lesion is typical and constant. The ulcer always occurs 1 or 2 cm. distal to the point of exit of the gastric contents from the stomach. So constant is this site of formation that it can be definitely indicated at the time of the operation, diverting the duodenal content. The ulcer seems to begin and develop in the area where the gastric contents strike first and with the greatest force on being expelled from the stomach. The ring of mucosa just distal to the stomach is protected from the force of the main stream of gastric contents. Furthermore, the site of the ulcer can be changed at will by changing the direction of the axis of the loop of intestine. If the intestine that is sutured to the pylorus is made to run in the same direction as the pylorus for a short distance and then is bent acutely, the ulcer will develop just proximal to the bend of the intestine. In such experiments the ulcer may develop 15 cm. distal to the usual site of formation. Furthermore, as will be noted in connection with healing, an animal may have one ulcer healing and another forming at the same time, the former being protected from the gastric contents and the latter developing in the new pathway of the gastric outflow. In some experiments we have repeatedly examined an ulcer, making an incision into the intestine opposite the lesion. The incision healed perfectly on each occasion, although the ulcer remained.

The rate of development of the ulcer depends somewhat on the size of the opening from the stomach through which the gastric contents are expelled. The ulcer will usually develop more rapidly and is more prone to perforate if the opening at the line of gastrointestinal anastomosis is made small. This arrangement appears to produce a nozzle-like action; that is, the gastric contents are made to impinge with greater force on the area in which the ulcer develops.

The propulsive action of the stomach is of significance in the development of the ulcer. If the force with which the stomach can expel its contents is decreased by making an hour-glass stomach in the prepyloric region, that is, by cutting through about three fourths of the diameter of the stomach and closing the two ends separately, the rate of development of the lesion is greatly decreased.

The character of the food is also of significance in the development of the experimental ulcer. We have found that a diet of coarse food increases the incidence of ulcer in the animal with Eck fistula. Frauley and Ivy [16] found that a coarse diet retarded the healing of the gastric mucosa of the rabbit from which certain areas had been denuded surgically. In our experiments perforation of an ulcer occurred at the time of passage from the stomach of rough objects, as noted by McCann.[1]

DEVELOPMENT OF EXPERIMENTALLY PRODUCED ULCER

As previously stated, experimentally produced ulcers begin at the surface of the mucosa. Macroscopically

16. Frauley, G. B., and Ivy, A. C.: Experimental Gastric Ulcer: The Effect of the Consistency of the Diet on Healing, Arch. Int. Med. 46: 524 (Sept.) 1930.

they appeared first as saucer-like depressions in the mucosa about 2 cm. distal to the pylorus. In their incipience there is always a ring of mucosa between the ulcer and the pylorus. In the earliest stages all that can be seen is a small area covered with a homogeneous gray membrane. When the membrane at the site of the beginning ulcer was gently sponged off, a slight depression was uncovered where the surface of the mucosa had disappeared and which bled profusely. This gray covering was noted on all ulcers that had not penetrated beyond the mucosa. After the mucosa is eroded the process may proceed quickly until the entire wall of the intestine is perforated and death occurs from peritonitis, or the perforation is closed with an adjacent organ, such as the pancreas, liver or gallbladder or a loop of intestine.

Microscopic study of the developing ulcer is in accord with what can be seen with the naked eye. The earliest ulcers examined have shown that the gray membrane is composed of mucosal cell débris. In the earliest stages the injury involves only the tops of the tubules, the remaining portion of the wall of the intestine appearing normal. Hemorrhage then occurs between the tubules underneath the covering of cell débris. As more of the mucosa is injured, leukocytic infiltration occurs; the lesion quickly penetrates below the muscularis mucosae, and the ulcer then assumes its well known characteristic appearance.

The rapidity with which the ulcer develops is often surprising. The minimal time necessary for an ulcer to penetrate through the mucosa is only a matter of hours and certainly less than a day. An ulcer may develop in mucosa that macroscopically appears normal, perforate and produce death from peritonitis within from forty-eight to sixty hours. An ulcer may present the typical appearance of a chronic ulcer within three weeks after it begins to form. An ulcer five months old may appear the same macroscopically as when it was one month old. We have gained the impression from our observations on the various stages in the development of these ulcers that the indurated and chronic appearance depends primarily on the amount of secondary infection present.

THE HEALING OF THE EXPERIMENTALLY PRODUCED ULCER

We found that these ulcers healed quickly and characteristically when protected from contact with the gastric contents. When an ulcer had developed in an animal, the site of the lesion was explored, the ulcer observed and measurements taken; in some instances a specimen for histologic study was also secured. Then the pyloric opening was occluded proximal to the ulcer, thus preventing the passage of the gastric contents over it, and the stomach was drained by gastro-enterostomy, the stoma in the jejunum being about 30 cm. distal from the ulcer.

In our first experiments we failed to secure gross evidence of the healing process. This was due to the fact that we did not realize the extreme delicacy of the healing tissue. After the ulcer had been protected for a definite period, the animal was killed, the specimen removed from the body and the mucosa washed at the tap in the usual manner. The lesion appeared grossly much the same as at the time it was protected from the gastric contents. Histologically, however, evidence of healing could be noted, and furthermore it was observed that most of the healing tissue had been lost. These observations led us to use a careful technic in securing the specimens of healing ulcer. We found that the healing area must not be touched. The specimen was carefully spread on cork or cardboard and fixed for histologic preparation. Gently washing the surface of a healing ulcer with water from a medicine dropper washed away the single layer of mucosal cells covering the granulation tissue and, often, the granulation tissue also.

We found that the ulcer healed with remarkable rapidity after it was protected from the gastric contents, and passed through a characteristic timed sequence of events. Macroscopically the first changes noted, which occurred within from forty-eight to sixty hours, were the disappearance of débris from the base of the ulcer and the formation of a protective covering of fibrin over the whole surface of the lesion. The hard induration usually had disappeared by this time. The ulcer appeared to become smaller and shallower, owing to a moving in of the edge of normal mucosa and a filling of the base with granulation tissue. These two processes occurred simultaneously. When the diameter of the ulcer had decreased to about half its original diameter the base of the lesion would be completely filled with a white, glistening tissue that appeared to resemble the freshly exposed surface of a joint. Before the ulcer had completely healed, this tissue filled the lesion and projeced as a bud above the surface of the mucosa. This projection of the tissue from the base of the ulcer was due to the mucosa growing from the periphery toward the center, pushing the granulation tissue filling the base of the ulcer upward. At first the mucosa was thin and smooth, but gradually it thickened and became thrown into folds. If the ulcer was small, it could not be detected with the naked eye after healing. If the ulcer was large, a depression always persisted after healing. The whole process of healing would occur in less than thirty days, and this stage of healing would be the same at the same time after protection in the different animals.

The microscopic appearance of the healing ulcer was more characteristic than its macroscopic appearance. The first change observed, which occurred within forty-eight hours, was the disappearance of the cell débris from the base of the ulcers, the decrease in leukocytes in the adjacent tissue and the formation of the fibrinous layer over the surface. The impression was obtained that the disappearance of the leukocytes was dependent on the protective covering, preventing bacteria from penetrating the base of the ulcer. The granulation tissue developed from the base and was very vascular. The connective tissue proliferated, and usually a thin limiting membrane of it formed over the base of the ulcer, replacing the first covering of fibrin. The mucosa grew in from the edges over the surface of the granulation tissue. At first the mucosa consisted of a single layer of flat or cuboidal cells on a basement membrane. As the mucosa grew it pushed the granulation tissue out, making a toadstool appearance of the latter. The growing ring of mucosa was thus protected by an overhanging edge of granulation tissue. Often the latter was completely pinched off at the center, although not before it was completely covered with at least a single layer of mucosal cells. As the cells of the mucosa increased in number and size, they became typically columnar, and the smooth edge was thrown into folds which carried the newly formed blood vessels and connective tissue with it. At first the folds were small and like waves, but as the mucosa grew typical normal villi appeared. When the ulcer had completely

healed, three factors distinguished it from normal mucosa histologically. The mucosa over the healed area was thinner than normal; the tubules were atypical and rested on a connective tissue base, as the muscularis mucosae does not regenerate.

Although the ulcer healed more rapidly and characteristically when fully protected from the gastric contents, it healed completely when it was only partially protected. Morton [17] found that an ulcer would heal if only gastro-enterostomy was done, leaving the pylorus open. However, under this partial protection the ulcer healed slowly and irregularly. The gastric contents passing over the ulcer would often wash away the granulation tissue from the base. The vascular granulation tissue would then bleed, filling the whole base of the ulcer with a blood clot. The regeneration of the mucosa would often take place under the protection of this blood clot. We also found that the ulcer healed if the duodenal contents were drained back over the lesion. But here also healing was slow and accompanied by many setbacks. It should be noted that healing of the ulcer by these two methods emphasizes that both chemical and mechanical factors are significant in its development.

THE CHRONICITY OF THE EXPERIMENTALLY PRODUCED ULCER

One of the problems in relation to ulcer is why it develops into a chronic lesion. A study of the process of development and healing of the ulcers in our experiments has clearly indicated why they become chronic. The agencies that were responsible for producing the ulcer prevent its healing. The processes of tissue destruction and tissue repair take place concomitantly from the incipience of the lesion, but the former always predominates because the new cells formed in the process of healing are destroyed by the acid or swept away by the passage of the gastric contents before they have had an opportunity to establish themselves as an integral part of the tissue. The reparative processes can be demonstrated in all ulcers at any stage of their development. They begin immediately after the injury to the mucosa. The destructive processes that produce the ulcer and the reparative processes go on simultaneously throughout the life cycle of the ulcer, except when it is completely protected from the gastric contents. However, each protective covering of granulation tissue formed over the base of the ulcer is destroyed before healing can take place beneath. As the delicate cells of the mucosa develop in the edge of the ulcer they are killed or washed away. Only when the ulcer is protected from the passage of the gastric contents over it to a degree at which the ever-present reparative processes can take place faster than the destructive processes does healing occur. It is thus evident that chemical and mechanical factors are very potent in the development of chronicity.

TREATMENT

Methods of treatment which are mainly directed against the acid factor in ulcer but which also influence the mechanical factor may be classified as dietary, alkalinizing, medicinal and emollient. We have attempted the use of each of these methods, and each appears to have sufficient merit to warrant further consideration. In our studies of the acidity of the stomach and duodenum of normal animals it was noted that the acidity produced by the digestion of food was only slightly dependent on the type of food administered. Regulation of gastric and duodenal acidity by frequent feedings was quite feasible for the normal dog, and definite reductions in acidity followed the administration of small amounts of food. This neutralization of normal gastric acidity, however, was only momentary unless sufficient food was given. There appeared to be a peculiar quantitative relationship between food and gastric acidity. For example, the high acidity of the gastric juice in a dog with psychic secretion was reduced for only two or three minutes following administration of 20 cc. of milk or cream; 40 cc. maintained a reduced acidity for five or ten minutes, but 80 cc. maintained a low level of acidity for almost two hours; further increases in the amount of milk or cream did not materially increase the period of neutralization. Repetition of feeding appeared to produce results similar to the first feeding. Although these results were obtained on normal dogs, observation has shown that a somewhat similar type of neutralization occurs in the presence of experimental gastrojejunal ulcer. The indications appeared quite clear that the reduction of gastric acidity by food was not effective unless sufficient food had been given.

Somewhat similar observations were made of the neutralization of gastric acidity by the administration of alkalis. Small doses of sodium bicarbonate only momentarily depressed gastric acidity, so that in a few minutes the acidity of the stomach was as high as before. Larger doses, approaching 1 Gm. of sodium bicarbonate for each kilogram of body weight, definitely depressed gastric acidity for several hours, but we were unable to maintain constant reduced acidity in this manner without producing definite symptoms of alkalosis. In the same way we were unable to produce healing of experimently produced ulcers by the administration of alkalis. However, we feel that this is by no means proof of the failure of alkalis in the treatment of ulcer but only attests the fact that we have been unable to produce a permanent reduction of acidity over the period necessary for healing of the ulcer.

Emollient substances should be of value in the treatment of peptic ulcer. Fogelson [18] suggested gastric mucin as an ideal substance for this purpose because it combines readily with free acid and is a neutral substance which normally plays a protecting, soothing and lubricating part in the functioning of the mucous membranes and also because it has no unfavorable effect on the gastro-intestinal, motor or secretory activity. Kim and Ivy [19] reported that the ulcer of a dog with complete biliary fistula has been prevented by the administration of 15 Gm. of mucin twice daily. We have found that mucin definitely reduced the amount of free hydrochloric acid, but have thus far been unable to produce healing in experimentally produced ulcers by its use. However, much of this work will have to be repeated, since Rivers, Vanzant and Essex [20] found that many of the samples of gastric mucin that we have used contained secretogogues of a histamine-like character as an impurity.

Since these ulcers heal readily when protected from the gastric contents, it seemed desirable to determine

17. Morton, C. B.: Observations on Peptic Ulcer: III. Healing of Experimental Ulcer After Gastro-Enterostomy, Ann. Surg. **85**: 229 (Feb.) 1927.

18. Fogelson, S. J.: The Treatment of Peptic Ulcer with Gastric Mucin: Preliminary Report, J. A. M. A. **96**: 673 (Feb. 28) 1931.

19. Kim, M. S., and Ivy, A. C.: The Prevention of Experimental Duodenal Ulcer by Feeding Neutral Gastric Mucin, J. A. M. A. **97**: 1511 (Nov. 21) 1931.

20. Rivers, A. B.; Vanzant, Frances R., and Essex, H. E.: The Dangers of Using Impure Mucin in the Treatment of Peptic Ulcer, J. A. M. A. **98**: 1156 (April 2) 1932.

whether healing could be produced by the oral administration of a substance or mixture that would partially protect them. The desirable characteristics of such a mixture are that it decreases the motor and secretory activity of the stomach, which occurs following the ingestion of fat, that it forms a protective coating over the ulcer as tenacious substances, such as acacia, might do, and that it buffers the free acid.

Harper produced some striking examples of healed ulcers by the use of a mixture of gelatin, acacia, olive oil and lecithin. This is a thick tenacious emulsion that has little neutralizing ability, but is apparently efficient in protecting the mucosa from injury. By inserting from 20 to 30 cc. of this mixture twice daily directly into the isolated fundic pouch, he was able to produce healing in ulcers which were known to be present. The mixture apparently gives protection against the mechanical factors of ulcer formation, but it has not as yet been tried in cases in which oral administration would be advisable. It would seem that this method or some similar method that can be directed toward decreasing the mechanical and chemical forces of the stomach over a long period would allow healing of an ulcer. It should be recalled, however, that even a short period of hyperacidity may be sufficient completely to retard healing and cause an almost completely healed ulcer to relapse to its original state.

ABSTRACT OF DISCUSSION

DR. I. S. RAVDIN, Philadelphia: Drs. Mann and Bollman have given a very clear picture of the experimental ulcer. In our laboratory, my associates and I have repeated the Mann method of duodenal drainage and have found that ulcer can be produced by this method. The ulcer, after drainage of the pancreatic ducts, which has been reported by Elman, has also been observed by Johnston. This ulcer and the one that occurs after ligation of the common duct has, in our experience, not been typical of the chronic duodenal ulcer which is observed in man. The relation of hyperacidity and mechanical factors to the production of chronic peptic ulcer is well established. We have observed in several instances chronic gastric ulcer in the dog after repeated roentgen exposure of the upper abdominal wall. In these instances we have found that the animals for a period of eight and even ten days after roentgen exposure have hypo-acidity or anacidity. Subsequent to this the acidity returns. After repeated exposures for a period of months, chronic gastric ulcer occasionally occurs. The recent attempts at suprarenal denervation to cure chronic duodenal ulcer are, in our experience, fraught with some danger, since MacLaughlin in our laboratory has been able to produce duodenal and jejunal ulceration following damage to the suprarenals. The ulceration that has occurred in these cases is seen chiefly in the Peyer's patches, but it also occurs in portions of the intestinal wall in which no Peyer's patches are situated.

Removal of Sting from Angina Pectoris.—It is quite time for a reconsideration of our views on the prognosis of angina pectoris. It is seen how patients with its severest form, coronary thrombosis, may not only recover from the attack but live in fair health, or even in good health, for months and years following it. If now we exclude coronary thrombosis, and also that other dangerous variety, syphilitic angina, we are left with the average patient, one subject to sternal pain on exertion—that is, angina of effort. This is just as certainly angina pectoris, and it connotes an uncertainty with regard to life; but the prognosis is far better than is commonly supposed. These patients—and they are not uncommon—usually live for years. Are these years to be darkened by dwelling on the possibility of sudden death? Coronary thrombosis has not taken the sting out of angina pectoris, but it has removed much of it. —Parkinson, John: Coronary Thrombosis, *Brit. M. J.*, Sept. 17, 1932, page 552.

THE RELATION OF ALKALOSIS TO PEPTIC ULCER

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Since Sippy [1] described his method of treating gastric and duodenal ulcers with excessive alkaline therapy, various authors have stressed the danger of alkalosis resulting from this plan of treatment. Hardt and Rivers,[2] in reporting sixteen cases of alkalosis which occurred in patients treated by this method, stated that patients with duodenal ulcer and renal complications were more inclined to develop toxic manifestations. These findings were confirmed by Shattuck, Rohdenburg and Booher.[3] Gatewood and his co-workers,[4] however, in a series of forty-six patients with peptic ulcer treated by the Sippy method, found that there was no definite evidence that the alkalemia observed was productive of any renal change. Definite nephritis was not recognized in any patients in whom alkalosis later developed. He concluded that pyloric obstruction was obviously an important factor in the production of alkalosis. Venables [5] and Jordan [6] stated that pyloric obstruction and previously existent renal disease played little or no rôle in causing alkalosis in duodenal ulcers treated by the Sippy plan. Recently, however, Jordan and Kiefer [7] maintained that hypertension and disturbed kidney function bore a relationship to an intolerance for alkalis.

It is apparent from the foregoing that a difference of opinion exists as to whether or not pyloric obstruction or renal disease plays a part in the development of alkalosis resulting from large doses of alkalis. All the observers, however, are in agreement that there is an increase in the carbon dioxide combining power and a decrease in the chlorides of the blood plasma. In severe cases of alkalosis the urea nitrogen is also increased.

The beneficial effect of alkalis in the treatment of peptic ulcer has been proved. Some observers, in order to avoid the danger of alkalosis, have made various suggestions. Bassler,[8] for example, advised that the reaction of the urine should be determined frequently and that the alkalinity should not exceed p_H 7 while the patient was under alkaline treatment.

From the Max Einhorn Gastro-Enterological Clinic of the Lenox Hill Hospital.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Sippy, B. W.: Diseases of the Stomach, in Musser, J. H., and Kelly, A. O. J.: A Handbook of Practical Treatment, Philadelphia, W. B. Saunders Company, 1914, vol. 3, p. 347.
2. Hardt, L. L., and Rivers, A. B.: Toxic Manifestations Following the Alkaline Treatment of Peptic Ulcer, Arch. Int. Med. **31**: 171 (Feb.) 1923.
3. Shattuck, H. F.; Rohdenburg, E. L., and Booher, L. E.: Antacids in the Medical Management of Peptic Ulcer, J. A. M. A. **82**: 200 (Jan. 19) 1924.
4. Gatewood, W. E.; Gaebler, O. H.; Muntwyler, Edward, and Myers, V. C.: Alkalosis in Patients with Peptic Ulcer, Arch. Int. Med. **42**: 79 (July) 1928.
5. Venables, J. F.: Alkalosis Following Alkaline Treatment of Duodenal Ulcer, Guy's Hosp. Rep. **75**: 152 (April) 1925.
6. Jordan, S. M.: Calcium, Chloride and Carbon Dioxide Content of Venous Blood in Cases of Gastroduodenal Ulcer Treated with Alkalis, J. A. M. A. **87**: 1906 (Dec. 4) 1926.
7. Jordan, S. M., and Kiefer, E. D.: Factors Influencing Prognosis in Medical Treatment of Duodenal Ulcer, Am. J. Surg. **15**: 472 (March) 1932.
8. Bassler, A.: Pertaining to Peptic Ulcer, Ann. Int. Med. **4**: 997 (Feb.) 1931.

Smithies,[9] again, confines himself to comparatively small doses of alkali and restricts their use to "counteract discomfort due to accumulations of overacid gastric contents associated with peristaltic unrest." Some clinicians have advocated antacids other than sodium bicarbonate and calcium carbonate. Greenwald[10] pointed out that tribasic phosphates of calcium and magnesium act as local antacids, but not as systemic alkalis; based on this theory, Kantor,[11] as well as Shattuck,[3] employed these salts in cases of peptic ulcer. There is no doubt, however, that sodium bicarbonate, and to a lesser degree calcium carbonate, neutralizes more hydrochloric acid more quickly and more consistently than any other alkali used in the treatment of peptic ulcer.

While it is true that alkalosis in peptic ulcer is the result of excessive alkaline therapy, we are of the opinion that too little attention has been paid to its method of administration and the type of case in which this form of therapy is to be employed. "The alkali sensitive" person is, perhaps, also too often overlooked. It occurred to us that the danger of alkalosis could be overcome if the following precautions were observed: First, it is essential to develop in the patient a tolerance for alkalis. Second, sufficiently large doses of alkali should be given to bring about a complete cessation of the symptoms, but not to the point of neutralization of the hydrochloric acid. Third, patients with pyloric obstruction should not be treated by this method.

EXPERIMENTAL DATA

Ninety-three cases in which there was clinical and roentgenographic evidence of gastric and duodenal ulcer were observed. The carbon dioxide combining power of the blood plasma (Van Slyke) and the whole blood chlorides (Whitehorn) were determined, and the urine and gastric contents of each patient were examined before the treatment was instituted and periodically thereafter. The specimens of blood were obtained between 2 and 4 p. m. without regard to meals. This procedure was followed because Gatewood[4] found that biochemical evidence of alkalemia is at its height from the afternoon until the evening. Examinations of the blood were made on the average of once a week unless clinical manifestations of alkalosis developed, when the blood was examined daily or every other day as long as the symptoms persisted. The patients were grouped as follows:

1. Patients treated by a modified Sippy plan whereby a tolerance was developed for alkalis.

2. Those with pyloric obstruction and extreme degrees of gastric hypotonus, who were not treated by this method.

3. Patients who were given large doses of alkalis according to the Sippy plan. These cases comprised the control group.

Group 1 comprised sixty-one patients: Four had gastric ulcers and fifty-seven duodenal ulcers; three of the patients showed evidences of renal dysfunction, one of whom had a coronary thrombosis; five others showed various manifestations of allergy. Forty-three patients with uncomplicated ulcers and the five allergic persons were treated by an ambulatory method. Another ten of the patients with uncomplicated ulcers and three with renal disease were treated by rest in bed.

The method of alkali administration and dietetic regimen in the ambulatory cases was as follows: Daily doses of 50 grains (3.3 Gm.) of sodium bicarbonate, 20 grains (1.3 Gm.) of calcium carbonate and 12 grains (0.8 Gm.) of magnesium oxide were given. These were gradually increased so that by the end of the second week the patients were receiving 160 grains (10.6 Gm.) of sodium bicarbonate, 35 grains (2.3 Gm.) of calcium carbonate and from 12 to 20 grains (0.8 to 1.3 Gm.) of magnesium oxide. If no clinical or biochemical evidence of alkalosis developed, the dosage was then gradually increased until there was a complete cessation of the symptoms. The average maximum dose necessary to relieve the symptoms completely was found to be 315 grains (21 Gm.) of sodium bicarbonate, 60 grains (4 Gm.) of calcium carbonate and from 12 to 35 grains (0.8 to 2.3 Gm.) of magnesium oxide. The maximum dose was maintained for six weeks, and thereafter the amount of alkali was gradually diminished. With a recurrence of the symptoms, the alkalis were again gradually increased. The patients were kept under observation from six months to two years. While the average maximum dosage stated was sufficient in most cases to alleviate the symptoms completely, in five patients an average daily dose of 500 grains (33.3 Gm.) of sodium bicarbonate and 75 grains (5 Gm.) of calcium carbonate was given. In two patients, 720 grains (48 Gm.) of sodium bicarbonate and 75 grains (5 Gm.) of calcium carbonate were necessary to keep them symptom-free.

It is essential that the patients be carefully observed for the first two weeks before administering the maximum dose for the complete relief of symptoms. This observation period is necessary, since most cases of alkalosis, as a result of the Sippy treatment, occur during the first fourteen days. In some patients it was necessary, during this period, to resort to the use of gastric lavage and antispasmodics.

The dietetic regimen employed in the ambulatory cases was similar to that used in our cases of pyloric obstruction, which was described in detail in a previous publication.[12]

For the patients with ulcer who were confined to bed, a plan of medication similar to that outlined was followed. In these cases the average maximum dose that brought about a complete cessation of the symptoms was 275 grains (18.3 Gm.) of sodium bicarbonate, 45 grains (3 Gm.) of calcium carbonate and from 12 to 20 grains (0.8 to 1.3 Gm.) of magnesium oxide. The dietetic routine in these cases was practically similar to the Sippy method.

In patients with ulcer with an allergic history, as well as those with renal disease, a more conservative plan of treatment was employed. In these cases smaller initial doses of alkali were given, which were much more gradually increased. This plan was followed in the former group of patients because, according to Beckman,[13] allergic persons are regarded as cases of "potential alkalosis." Precautionary measures were likewise taken in patients with renal diseases because of the published reports that this type of patient with ulcers is more inclined to toxic manifestations as a result of alkaline therapy.

9. Smithies, F.: Observations upon the Nature, Diagnosis and Clinical Management of Gastric Ulcer with Suggestions for a Rational Regimen of Treatment, Am. J. M. Sc. **166**: 781 (Dec.) 1923.
10. Greenwald, L.: Gastric Antacids Which Cannot Act as Systemic Alkalis, Proc. Soc. Exper. Biol. & Med. **20**: 436 (May) 1923.
11. Kantor, J. L.: Antacid Gastric Therapy, with Especial Reference to the Use of Neutral Antacids, J. A. M. A. **81**: 816 (Sept. 8) 1923.
12. Rafsky, H. A.: Is Pyloric Obstruction in Peptic Ulcer Always an Indication for Surgery? M. J. & Rec. **132**: 187 (Aug. 20) 1930.
13. Beckman, H.: Allergy and the Acid-Base Balance, J. A. M. A. **95**: 1582 (Nov. 22) 1930.

Of the patients in group 1 who were treated by the methods outlined, none showed signs of alkalosis as evidenced by the carbon dioxide combining power of the blood plasma and the blood chlorides. In one patient who had an intolerance for eggs, certain symptoms developed that made it necessary to discontinue the alkali medication. This subject was a highly neurotic patient with a characteristic sympathetic imbalance that is often seen in allergic persons. He had been taking 80 grains (5.3 Gm.) of sodium bicarbonate, 35 grains (2.3 Gm.) of calcium carbonate and 15 grains (1 Gm.) of magnesium oxide for about nine days when he complained of dryness of the mouth, nervousness, headache, dizziness and apprehension. At the height of his symptoms the carbon dioxide combining power was 60 per cent by volume, and the blood chlorides were 495 mg. All the symptoms disappeared after the alkalis were discontinued.

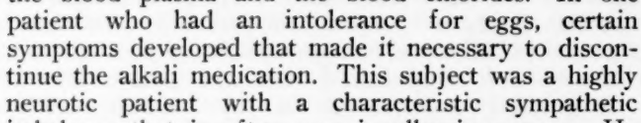

Fig. 1.—Patient W. B., aged 31, with a duodenal ulcer with pyloric obstruction. *A*, roentgenogram taken immediately after the ingestion of a barium meal, on Jan. 8, 1932. *B*, six hour film taken on January 8. Almost one half of the barium meal is still in the stomach. *C*, six hour film taken after twenty days of treatment by the ambulatory method (January 28), which does not entail any danger of alkalosis. The stomach empties in normal time.

Comparison of Groups 1, 2 and 3

	Per Cent by Volume of Carbon Dioxide of Blood Plasma	Mg. per 100 Cc. of Blood Chlorides (Normal 450-500)
Group 1: 61 patients treated by excessive alkali therapy according to method described in this paper		
Minimum	41.5	467
Maximum	63.0	576
Average	53.2	489
Group 2: 20 patients not treated with excessive alkali therapy		
Minimum	48.1	485
Maximum	62.7	521
Average	51.9	491
Group 3: 12 patients treated by Sippy plan		
Minimum	42.6	452
Maximum	69.7	539
Average	57.3	473

Group 2 consisted of the following: one patient with a gastric ulcer and nine patients with duodenal ulcers complicated by pyloric obstruction; two patients with gastric and eight with duodenal ulcers accompanied by marked gastric hypotonia. The patients with pyloric obstruction were not treated with excessive alkaline therapy. MacCallum[14] and Hastings[15] and their co-workers found that when the pylorus was occluded in dogs, there occurred definite biochemical changes, such as an increase in the carbon dioxide combining power and a decrease in the chlorides of the blood plasma. These observations were confirmed by Haden and Orr.[16] It has been shown by Brown, Eusterman, Hartman and Rowntree[17] that in patients suffering from pyloric or duodenal obstruction (due to various benign and malignant diseases) there were certain clinical manifestations and characteristic findings in the blood, such as increased carbon dioxide combining power of the plasma and decreased plasma chlorides. McVicar[18] showed similar changes in the blood and much the same clinical syndrome in patients with the toxemia of high intestinal obstruction. This clinical and biochemical picture was similar to that described in cases of alkalosis resulting from excessive alkaline therapy. Therefore, in view of the foregoing facts it seemed to us that cases of pyloric obstruction were potential cases of alkalosis, and that large doses of alkali were contraindicated. Ten patients with pyloric obstruction were treated by an ambulatory plan. Briefly stated, this method of treatment consisted of a high caloric liquid or semiliquid diet which was gradually increased as the patient improved. A series of gastric lavages, antispasmodics and very little alkali medication were also given. At times equal parts of not more than 5 grains (0.3 Gm.) of magnesium oxide and sodium bicarbonate were given three times daily. More often the following resorcinol mixture was prescribed:

		Gm. or Cc.	
℞	Resorcinol	2	3 ss
	Magnesium oxide	4	3 i
	Acacia	q. s.	q. s.
	Distilled water	180	3 vi

M. Sig.: One-half ounce three times daily.

In treating patients with ulcers and pyloric obstruction, one must bear in mind that in the production of a stenosis at the pylorus, the obstruction goes through two stages: (1) pylorospasm with edema and congestion, the inflammatory type of obstruction which is amenable to medical treatment, and (2) the stage of cicatrization; this type of obstruction requires surgical intervention. The therapeutic test may be necessary to differentiate the two types.

Fig. 2.—Patient Mrs. E. L., aged 28, with a duodenal ulcer with pyloric obstruction. *A*, roentgenogram taken immediately after the ingestion of a barium meal, on Nov. 1, 1929. *B*, six hour film taken on November 1, showing marked gastric retention. *C*, roentgenogram taken on Oct. 18, 1931. The stomach still empties within normal time, almost two years after the ambulatory plan of treatment, which did not entail any danger of alkalosis. There has been no roentgenographic evidence of pyloric obstruction in this patient since Dec. 21, 1930.

14. MacCallum, W. G.; Lintz, J.; Vermily, A. N.; Leggett, T. H., and Boas, E.: The Effect of Pyloric Obstruction in Relation to Gastric Tetany, Bull. Johns Hopkins Hosp. **31**: 1 (Jan.) 1920.

15. Hastings, A. B.; Murray, C. D., and Murray, H. A., Jr.: Certain Chemical Changes in Blood After Pyloric Obstruction in Dogs, J. Biol. Chem. **46**: 223 (March) 1921.

16. Haden, R. L., and Orr, T. G.: Chemical Changes in the Blood After Pyloric Obstruction, J. Exper. Med. **37**: 377 (March) 1923.

17. Brown, G. E.; Eusterman, G. B.; Hartman, H. R., and Rowntree, L. G.: Toxic Nephritis in Pyloric and Duodenal Obstruction: Renal Insufficiency Complicating Gastric Tetany, Arch. Int. Med. **32**: 425 (Sept.) 1923.

18. McVicar, C. S.: The Clinical and Laboratory Clinical Findings in Certain Cases of Obstruction in the Upper Gastro-Intestinal Tract, Am. J. M. Sc. **169**: 224 (Feb.) 1925.

The ten patients with ulcers with extreme gastric atony and dilatation were likewise excluded from the method of treatment which called for large doses of alkalis. This precaution was employed because in this group of patients pyloric obstruction was frequently present in spite of the absence of roentgenographic evidence of gastric retention. These patients were treated by duodenal feedings and medication similar to that used in cases of pyloric obstruction. It required more than four days for the duodenal tube to pass the pylorus. In two patients the tube did not pass the pylorus in seven days, even though there was no roentgenographic evidence of obstruction. At operation an almost complete occlusion of the pylorus was found in each case.

Group 3 (the control group) consisted of twelve cases of uncomplicated peptic ulcer (one gastric and eleven duodenal). These patients were treated by large doses of alkalis administered according to the Sippy plan. In nine of these patients an average daily dosage of 385 grains (25 Gm.) of sodium bicarbonate, 95 grains (6.3 Gm.) of calcium carbonate and from 12 to 20 grains (0.8 to 1.3 Gm.) of magnesium oxide was necessary to produce a complete or almost complete neutralization of the hydrochloric acid, while in the other three, the acidity was not materially reduced. In two of the cases in which the hydrochloric acid was completely neutralized, marked symptoms of alkalosis developed. In one patient (M. M.) alkalosis occurred on the fifth, and in the other (M. G.) on the twelfth, day after the treatment had been started. The patients complained of dryness of the mouth and throat, intense headache and nervousness. In one, severe vomiting was present. The blood showed definite chemical changes in both cases. In patient M. M., the carbon dioxide combining power of the blood plasma and the blood chlorides before treatment were 48.6 per cent by volume and 511 mg., respectively; just prior to the discontinuance of the medication on the sixth day, the carbon dioxide and the blood chlorides were 69.7 per cent by volume and 465 mg., respectively. In patient M. G., the carbon dioxide combining power of the blood plasma and the blood chlorides before treatment were 51 per cent by volume and 518 mg., respectively. On the twelfth day, the carbon dioxide rose to 68.9 per cent by volume and the blood chlorides decreased to 452 mg. All the symptoms and biochemical evidence of alkalosis disappeared after the medication was discontinued.

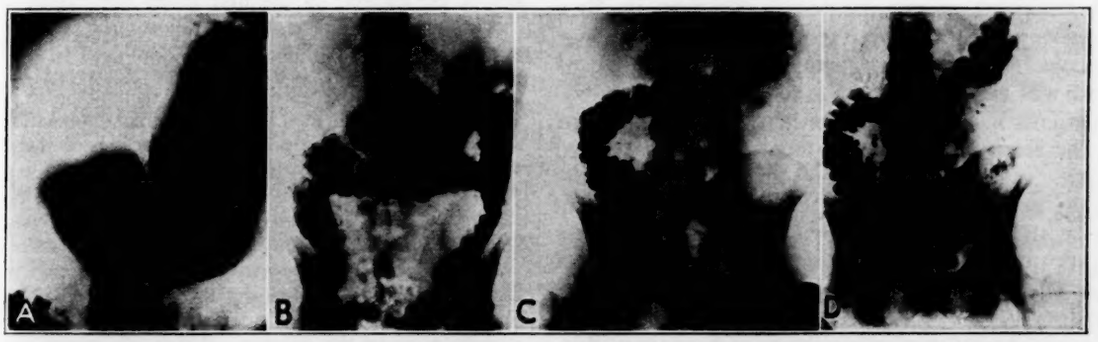

Fig. 3.—Patient I. G., aged 43, with a duodenal ulcer with pyloric obstruction. This case was described previously (Rafsky [footnote 12]), after the patient had been observed for three years. His case is again presented after he has been followed up for five and one-half years since he was first treated. *A*, roentgenogram taken immediately after a barium meal, on Oct. 22, 1926. *B*, film taken forty-eight hours after a barium meal, October 24, showing marked gastric retention. *C*, roentgenogram taken one and one-half years after treatment, May 27, 1928. The stomach empties within normal time. *D*, roentgenogram taken about five and one-half years after treatment, April 19, 1932. Less than a drachm (3.9 Gm.) of barium is seen in the stomach. Since the patient was discharged on Jan. 26, 1926, there has been no roentgenographic evidence of pyloric obstruction. He was checked up on April 19, 1932, and he was still symptom-free and had retained his gain of 18 pounds (8.2 Kg.) in weight. Here again an ambulatory method of treatment was employed, which did not entail any danger of alkalosis.

COMMENT

Ninety-three cases were observed. The patients were classified into three groups: (1) those treated by a method to develop a tolerance for excessive alkali therapy; (2) those not included in this plan, and (3) the control group—patients treated by excessive alkali therapy administered according to the Sippy plan.

In spite of the fact that large doses of alkali were given to the sixty-one patients in group 1, there was no clinical or biochemical evidence of alkalosis in sixty cases. While one allergic patient did develop symptoms of alkalosis, the carbon dioxide combining power of the blood plasma and the blood chlorides did not show any distinct variation. On the other hand, of the twelve patients in the control group who were treated, two developed clinical manifestations of alkalosis, which made it necessary to discontinue the medication. In these patients the carbon dioxide combining power of the blood plasma and the blood chlorides showed definite changes. Even more significant are the findings of Jordan [6] and Gatewood.[4] The latter, in a series of forty-six cases of complicated and uncomplicated peptic ulcers in which the patients were treated by the Sippy method, found that in about two thirds of the patients at some time or another there was an increase in the carbon dioxide combining power of the blood plasma and a fall in the plasma chlorides. In twenty-one cases, uncompensated alkalosis developed. Jordan,[6] as a result of a study of forty-one patients with peptic ulcers treated by the Sippy plan, found that the average level of plasma chloride of the venous blood was lower by 23 mg. per hundred cubic centimeters than the normal, and the average variation in individual cases was greater, while the average level of the carbon dioxide content was higher by 2.7 per cent by volume than the normal, and the average variation in individual cases was greater.

In our cases in which the patients were treated by the method described in this paper, the average carbon dioxide combining power of the blood plasma was 53.2 per cent by volume and the average level of the blood chlorides was 489 mg., while in the control group the average level of the carbon dioxide combining power was 57.3 per cent by volume and the blood chlorides, 473 mg.

While excessive alkali therapy was given to the patients in group 1 to cause a complete cessation of the symptoms, no attempt was made to bring about complete neutralization of the hydrochloric acid, which is part of the Sippy[1] plan. In two cases, patients E. R. and S. E., the free hydrochloric acid of the gastric contents was 75 and 65, respectively, while the total acidity was 90 and 85, respectively. After four weeks of daily doses of 720 grains (46.6 Gm.) of sodium bicarbonate, 75 grains (5 Gm.) of calcium carbonate and 12 grains (0.8 Gm.) of magnesium oxide, the hydrochloric acid of the gastric contents showed 47 and 41, respectively, while the total acidity was 69 and 55, respectively.

Of the patients with ulcers in group 1 treated with excessive alkaline therapy, administered by the method described in this paper, 81 per cent remained symptom-free while under observation. Included in this group were three patients with gastric ulcers and twelve with ulcers of the duodenum who showed roentgenographic evidence of improvement. In patients with a persistent deformity of the duodenum, it is difficult, roentgenographically, to gage the patient's progress unless a niche or crater is present. In 5 per cent of the cases surgical intervention was necessary. Fourteen per cent of the patients remained refractory to alkali; that is, they did not become symptom-free irrespective of how large a dosage was given or how many times the course of treatment was repeated.

The patients in group 2 (with the obstructive type of ulcer), for reasons previously stated, were not treated by the same method that was employed in treating the patients in group 1. Although Sippy[19] stated that in patients with ulcer with pyloric obstruction gastroenterostomy could often be avoided by his method of treatment, nevertheless, we feel that patients with the inflammatory type of pyloric obstruction should not be treated with excessive alkaline therapy, for, as is illustrated in figures 1, 2 and 3, the obstructive type of ulcer can be successfully treated by a method that does not entail any danger of alkalosis nor does it confine the patient to bed.

CONCLUSIONS

1. Excessive doses of alkalis were administered to sixty-one patients with peptic ulcers, by a method in which initial small doses were followed by progressively larger doses until there ensued a complete cessation of the symptoms. The carbon dioxide combining power of the blood plasma and the blood chlorides did not reveal any evidence of alkalosis in any of these cases.

2. Patients with renal disease and allergic persons were treated more cautiously by this method.

3. Patients with pyloric obstruction and extreme degrees of gastric hypotonia were not treated by this plan.

4. Two patients, who were treated according to the Sippy method, developed severe symptoms of alkalosis and showed definite biochemical changes.

5. In order to minimize the danger of alkalosis resulting from excessive alkaline therapy, more attention should be directed to the method of administration as well as to the type of patient to receive this form of therapy.

77 East Seventy-Ninth Street.

19. Sippy, B. W., quoted by Jones, A. O.: Gastric Ulcer, Duodenal Ulcer, Erosions, Hemorrhage, in Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc., 1926, vol. 4, p. 464.

ABSTRACT OF DISCUSSION

DR. LEO L. J. HARDT, Chicago: In 1928 I read a paper before the Association of Resident and Ex-Resident Physicians of the Mayo Clinic on my experience with neutral antacid salts in the treatment of peptic ulcers. The salts used were equal parts of tribasic calcium phosphate and calcium carbonate. Forty cases were observed over a period of three years. The hospital patients daily received from 350 to 400 grains (22.75 to 26 Gm.) of tribasic calcium phosphate and 140 grains (9 Gm.) of sodium phosphate in divided doses without any signs or symptoms of alkalosis. In this limited series of cases I was tempted to conclude that this combination of antacids was the ideal combination, but since publishing this report I have observed several cases of alkalosis on the same routine. This experience makes me wonder whether or not the authors might have been fortunate in their selection of cases in group 1. The question that arises in my mind in hearing their paper is: Would any of the patients in group 1 have developed alkalosis if treated in the usual Sippy manner? They might have successfully answered this question in their paper if they had taken the patients that had developed alkalosis under the Sippy treatment and built up their tolerance for alkalis according to the method they outlined. The antacids method which I outlined in 1928 worked beautifully in fifty-two cases. An alkalosis developed in the fifty-third case. If the authors had taken a group of proved alkali sensitive patients and built up their tolerance in the manner that they described, their report would be far more convincing. As it is, one is led to wonder whether any of the patients in the first group were sensitive to alkali shock as a result of the administration of large doses of alkalis. The authors might have strengthened their conclusions by taking the patients in group 3 that developed alkalosis and trying to desensitize them by their method or by treating all with the Sippy method. No scientific explanation of alkali shock has to date been given. I sincerely hope that Dr. Rafsky and his co-workers will follow up the suggestion in their future experiments.

DR. JAMES B. EYERLY, Chicago: I discontinued using sodium bicarbonate two years ago. This alkali produces disturbances more readily than others in common use. Calcium carbonate was substituted and the percentage of patients developing alkalosis was markedly decreased. These few patients usually tolerate the tribasic calcium phosphate. Clinical pictures and laboratory observations in cases in which the patients do not tolerate calcium carbonate are similar to those produced by sodium bicarbonate. In the blood the chlorides are consistently low. The hydrogen ion concentration and serum calcium are constant. The excretion of phenolsulphonphthalein is decreased in proportion to a drop in the chlorides. Before the clinical symptoms appear, the patient usually has an increased urinary output. As the picture develops, the fluid output is markedly diminished. What becomes of the chlorides? They are not vomited and the amount excreted in the urine is much less than normal. They must be stored in the tissue or cells. I do not believe that this is a nephritis or that it causes nephritis. The problem is much more difficult to investigate; i. e., the metabolism of the cell. Normal cell chemistry is changed; also there is a disturbed water balance, as shown by absorption tests. Alkali sensitive is probably an excellent term as used by the authors. Certain patients do seemingly develop a tolerance but must be carefully supervised. Possibly the alkali sensitive individual may be potentially uremic. Time and careful study of these cases will determine this. No set rule can be established for the treatment of ulcer. It is no more sane to say that each ulcer patient must be given 20 grains (1.3 Gm.) of calcium carbonate each hour than to say that every diabetic person must receive 60 units of insulin each day. Each patient must be treated as an individual and not as a part of a routine management. I believe that alkali management is the logical treatment of ulcer except in a small percentage of cases. In these the patients may require such treatment as rest, proper diet, certain drugs and in an occasional case duodenal feeding. Rest of the patient is essential in any type of management and is a factor for which there is no substitution. Solubility, which probably influences absorption, is probably the factor one must consider seriously in the alkali management of peptic ulcer.

TREATMENT OF MALIGNANT TUMORS

ADVANTAGES OF WEAK HEAVILY FILTERED RADIUM NEEDLES

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DALLAS, TEXAS

It is now common knowledge that certain tumors such as lymphosarcomas and masses of leukemic glands may be melted away rapidly with irradiation, whereas other forms such as adenocarcinomas respond less rapidly. The explanation of this difference is fairly simple. All living cells can be destroyed by radiant energy, but the dosage required for the destruction of the more resistant malignant processes approaches close to the dose that most normal tissues will tolerate without irreparable injury. Normal tissues vary in their reaction to irradiation just as do the malignant cells, and the problem involved in safely eradicating only the abnormal structures becomes difficult in the deeper parts of the body. Obviously, any modification of technic designed to increase the factor of safety for the normal structures surrounding a malignant tumor will decrease sloughing and expedite the handling of resistant neoplasms.

Régaud [1] and his associates at the Radium Institute in Paris have been interested in this problem for many years, and after carrying out numerous experiments on the testes of rams and rats have developed two important facts: 1. Irradiation of great penetrating power and short wavelength has much less necrotizing effect and a greater selectivity for radiosensitive cells than irradiation of less penetrating power and longer wavelength. 2. The selectivity of radiant energy for radiosensitive cells is increased when the duration of the exposure is increased with a corresponding decrease in intensity. These principles were put into practice by preparing long, heavily filtered, platinum needles containing small amounts of radium for use in implantation therapy. Lenz [2] stated that these needles were 2.7 and 3.5 cm. long, had a wall thickness of 0.5 mm., and contained 0.66 and 1 mg. of radium element. Only gamma rays pass through 0.5 mm. of platinum. One needle was allowed per cubic centimeter of tissue and was left in place for eight days. The radium content amounted to from 0.3 to 0.44 mg. per running centimeter of active length of the needle. The efficacy of this method was soon demonstrated in lesions of the mouth in which healing occurred rapidly with little or no reaction, whereas lightly filtered needles containing large amounts of radium and used for short periods had previously produced painful sloughs that healed slowly if at all and often became infected.

These new principles have been further developed by the Memorial Hospital in New York, the Radium Institute in Brussels and Westminster and St. Bartholomew's hospitals in London. In this country most of the work has been carried out with gold radon seeds, which were first described by Failla [3] in 1926. They are tiny, hollow, gold tubes measuring 5 mm. in length, having a wall thickness of 0.3 mm. and containing from 1 to 2.5 millicuries of radon, a gas that gives off exactly the same rays as radium element but rapidly loses its strength. These seeds are left in the tissues permanently, as a rule, although some of them are attached to threads so that they may be removed. The walls of 0.3 mm. of gold do not remove quite all of the beta rays coming from the radiant source.

I have followed the technic of the London group, and for two years have carried out certain phases of radium therapy according to the English method. Our equipment in the hospital is not large, and we are at present using only two sizes of the platinum iridium needles described by Cade.[4]

One needle measures 11 mm. in length and 1.5 mm. in diameter, has a wall thickness of 0.5 mm., and contains 0.6 mg. of radium element. A longer needle measures 27 mm. in length and 1.85 mm. in diameter, has a wall thickness of 0.6 mm., and contains 1.33 mg. of radium. Each of these applicators contains, roughly, 0.6 mg. of radioactive salt per running centimeter of active length. Much longer needles are used by some of the English workers, the longest one measuring about 5.5 cm., but the principle of using 0.6 mg. per centimeter of active length is generally carried out. This type of construction is advantageous, because it has been shown that 0.6 mm. of radium element filtered with at least 0.5 mm. of platinum and left in place for seven days will completely destroy a cubic centimeter of squamous cell carcinoma with a minimum reaction in the surrounding normal tissues.

CARCINOMA OF THE MOUTH

The surgical treatment of malignant conditions inside the mouth has produced a relatively small percentage of "cures" (Simmons [5] reported 35 per cent in early cases), and at best is an unpleasant, mutilating method. Irradiation, when successful, almost completely restores normal function and is practically devoid of danger. Implantation of gold radon seeds has been used successfully by Quick,[6] Martin and Sharp [7] and others, and some encouraging results obtained with heavily filtered external contact applicators have been reported by Pfahler,[8] Widmann [9] and Grier.[10] However, the radiologist with equipment of modest proportions who lives in a remote portion of the United States where radon seeds are difficult to obtain and are expensive will find the technic of Evans and Cade [11] most satisfactory. It cannot be used on the back of the tongue, the posterior nasopharynx and other such inaccessible locations where radon seeds are the method of choice, but has its application in cancer of the cheeks, floor of the mouth, inner lip and anterior portions of the tongue. Under local anesthesia the small 0.6 mg. platinum needles are implanted under the edges of the lesion at 1 cm. intervals, care being taken to keep them in normal tissue.

Read before the Section on Radiology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the author's reprints.

1. Régaud, Claude: Some Biological Aspects of the Radiation Therapy of Cancer, Am. J. Roentgenol. **12**: 97-101 (Aug.) 1924.
2. Lenz, Maurice: Curie Therapy of Epidermoid Carcinoma of the Intra-Oral Group as Carried Out at the Radium Institute, Paris, Am. J. Roentgenol. **15**: 210-213 (March) 1926.
3. Failla, G.: The Development of Filtered Radon Implants, Am. J. Roentgenol. **16**: 507-525 (Dec.) 1926.
4. Cade, Stanford: Radium Treatment of Cancer, New York, William Wood & Company, 1929.
5. Simmons, Channing C.: Cancer of the Mouth: The Results of Treatment by Operation and Radiation, Surg., Gynec. & Obst. **43**: 377-382 (Sept.) 1926.
6. Quick, Douglas: Radium and Surgery in Cancer of the Tongue, Brit. M. J. **2**: 944-947 (Dec. 6) 1930; Treatment of Intra-Oral Cancer with Special Reference to Radium Therapy, New York State J. Med. **30**: 1094-1096 (Sept. 15) 1930; Treatment of Cancer of the Lip and Mouth, Am. J. Roentgenol. **21**: 322-327 (April) 1929.
7. Martin, H. E., and Sharp, G. S.: The Use of Gold Filtered Radon Implants in the Treatment of Intra-Oral Cancer, Am. J. Roentgenol. **26**: 28-38 (July) 1931.
8. Pfahler, G. E.: Improved Technique for the Use of Highly Filtered Gamma Rays in the Treatment of Cancer of the Mouth, Am. J. Roentgenol. **23**: 633-638 (June) 1930.
9. Widmann, B. P.: Radiation Technique for Cancer of the Mouth with Combinations of Gamma Radium Rays and Varying Quantities of High Voltage Roentgen Rays, Radiology **14**: 197-206 (March) 1930.
10. Grier, G. W.: The Treatment of Malignant Disease in the Mouth, Am. J. Roentgenol. **12**: 347-352 (Oct.) 1924.
11. Evans, A., and Cade, S.: Cancer of the Tongue: Preliminary Report on Radium Treatment, Brit. J. Surg. **15**: 55-70 (July) 1927.

Each needle is stitched in place, and a guy thread passes outside the mouth, where it is attached to a radium tag on the forehead. The needles are left in situ for seven days, during which time a careful hygienic routine must be carried out. When extension occurs on the hard palate or alveolar margin, it is sometimes necessary to augment the treatment with 25 mg. and 50 mg. platinum radium capsules held in contact with the lesion by Grier's method. Block dissections are not done as a routine measure, but the care of the neck advocated by Quick [12] is carried out except that weak platinum needles are used instead of radon implants.

In about ten days a white membrane forms over the primary lesion and the tumor melts away. The membrane desquamates, leaving a granulating surface in about three or four weeks, and healing is usually complete in from two to two and a half months. Sloughing and painful reactions do not occur, and if the mouth is kept clean infection is not a troublesome factor. Scarring is slight, and function is usually completely restored. The following case is a good example:

CASE 1.—A man, aged 58, applied for treatment on April 7, 1930, because of a hard tumor about three-fourths inch (1.87 cm.) in diameter of five months' duration near the center of the dorsum of the tongue. The biopsy report was squamous cell carcinoma, grade III. No glands were palpable in the neck. Nine 0.6 mg. platinum radium needles were implanted at 1 cm. intervals under the edges of the tumor for seven days. Soft and liquid foods were taken regularly, and the patient complained of little pain. Erythema doses (800 roentgens with back-scattering) of copper filtered high voltage roentgen rays were administered to each side of the neck.

Soon after the needles were removed, a white membrane appeared on the tongue and the tumor melted away. At the end of two months, the membrane was gone and the granulating surface had practically healed. At the end of three months, healing was complete, with little scarring, and speech and mastication were practically normal. The patient had gained 16 pounds (7.3 Kg.).

At the end of seven months he still felt quite well, but a single small, movable gland was discovered in the right side of the neck. A block dissection was immediately done by Dr. W. E. Sistrunk. Two years have elapsed since the original treatment, and the patient looks and feels well and has gained a total of 20 pounds (9 Kg.).

Patients with advanced inoperable intra-oral lesions can often receive immense benefit and sometimes complete relief by irradiation, as shown in case 2:

CASE 2.—A man, aged 35, consulted us on Dec. 5, 1931, because of a hard ulcer in the left cheek which had been treated as "trench mouth" until it became quite large and perforated to the outside, causing so much induration that the mouth could be opened only about one fourth inch (0.64 cm). There was much pain in the side of the face, and a foul discharge drained continuously from the mouth. The patient was extremely uncomfortable and much depressed. A hard gland about three-fourths inch in diameter was felt beneath the angle of the jaw. Examination of a piece of tissue removed from the edge of the ulcer led to the diagnosis of squamous cell carcinoma. A malignant nodule was growing on the outside of the cheek at the edge of the sinus connecting with the ulcer.

Eight long, 1.33 mg., platinum, radium needles were planted radially in the base of the ulcer from the outside, and seven 0.6 mg. needles were placed in the spaces between the outer ends of the long needles. Four long 1.33 mg. needles were planted vertically at 1.5 cm. intervals beneath the angle of the left jaw. All of these applicators were left in place for seven days, during which time each side of the neck received full erythema doses of copper-filtered high voltage roentgen rays, and one 50 mg. platinum radium capsule (1 mm. walls) was held inside the left cheek for eight hours. Two heavily filtered 50 mg. radium packs were also placed against the outside of the left cheek, with the radium placed 2 cm. from the skin surface for twenty hours. A rigid plan of oral hygiene was adopted.

Steady improvement occurred, so that at the end of three months the discharge had ceased, the discomfort was relieved, the cheek had healed over both inside and outside, and the sinus had closed. The patient had gained 10 pounds (4.5 Kg.), and the gland beneath the jaw was no longer palpable. However, the mouth could not be opened, and on March 24 the scar inside the cheek was incised by Dr. W. E. Sistrunk so that the teeth could be separated for a distance of about 1¼ inches (3.14 cm.). A small malignant lesion was then observed well back between the third molars, extending upward toward the anterior pillar. Small radium needles were sewed under this lesion for seven days, with the hope that it might also be eradicated.

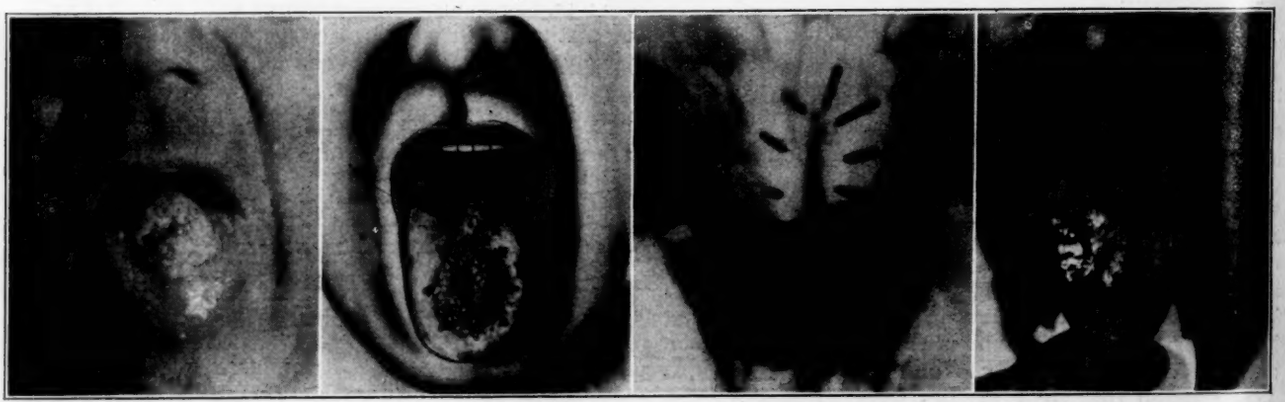

Fig. 1 (case 1).—Photographs and drawings illustrating results obtained. The patient with this squamous cell carcinoma of the tongue has remained well for two years.

CARCINOMA OF THE BREAST

Surgery has established an enviable record in cancer of the breast, and irradiation methods have until recently held a place of secondary importance. However, the work carried out by Geoffrey Keynes [13] at St. Bartholomew's Hospital in London during the past ten years with weak heavily filtered platinum radium needles bids fair to place irradiation on an equal footing with surgical procedures. This author is modest in his claims and suggests that his method will at least be of great value in the treatment of patients who cannot stand operative procedures and those who are inoperable or have postoperative recurrences. A perusal of a

12. Quick, Douglas: Interstitial Radiation in Metastatic Cervical Nodes of Epidermoid Carcinoma, Ann. Surg. **93**: 380-390 (Jan.) 1931.

13. Keynes, Geoffrey: The Radium Treatment of Carcinoma of the Breast, Brit. J. Surg. **19**: 479-480 (Jan.) 1932.

set of three year statistics compiled by Forber [14] for a small group of his patients indicates that the technic has a most promising future even for operable cases.

Keynes favors long needles having an active length varying from 3.2 to 4.8 cm., but the approximate distribution of 0.6 mg. of radium per running centimeter is carried out. These needles are placed radially, in a lattice pattern, or side by side, well beneath the primary tumor at approximately 1.5 cm. intervals, and similar implantations are made in the axilla, above and below the clavicle, and in the upper intercostal spaces near the sternum, for periods of seven or eight days. Shrinkage of both the primary tumor and the metastatic glands occurs during the succeeding three months, and in many instances all evidence of the lesion disappears, while in others a fibrous scar remains. It is most interesting to note that the breast may regain its normal consistency and be capable of lactation following this procedure.

As we do not have enough long needles to carry out the lymphatic implantations as yet, we have in a few instances treated the primary lesions with the needle technic and applied vigorous deep roentgen therapy to the lymphatic areas, with surprisingly good results. The following case illustrates the method:

CASE 3.—A woman, aged 56, having refused operation, consulted us on Jan. 5, 1932, relative to a hard tumor in the left breast which had slowly grown from a mass the size of a marble six years ago to a tumor 2½ inches (6.3 cm.) in diameter. The nipple was destroyed, and the overlying tissues were invaginated, but the mass was movable and no definite glands could be felt in the neck or axilla. Fourteen long 1.33 mg. platinum radium needles were planted radially under the tumor and five 0.6 mg. short needles under the edges of the ulcer at the site of the nipple for seven days. Meanwhile the neck, axilla and mediastinum were crossfired with erythema doses of copper-filtered, high voltage roentgen rays.

At the end of three months the skin was healed over the nipple area, the underlying tumor had disappeared, and a small patch of induration resulting from an abscess that occurred in one of the needle punctures was rapidly healing.

Two similar cases, one in a diabetic patient, in which the patients were treated over a year ago, still show no evidence of recurrence.

Lee [15] has treated a limited number of patients with tumors of the breast with irradiation alone, combining external radium packs with buried gold radon seeds. Although small tumors have responded quite well to this method, the accurate distribution of the small sources in large tumors and evenly throughout the metastatic areas has proved most difficult. Lee feels that he has demonstrated that with his method from twelve to thirteen erythema doses are needed for the complete destruction of the more resistant forms of mammary carcinoma. Pack [16] has recently carried out a modification of Keynes' technic, utilizing elongated gold capillary radon tubes instead of element needles. The tubes measure from 4 to 8 cm. in length, have a wall thickness of 0.3 mm., and contain from 1.5 to 2 millicuries per centimeter of active length. They are passed through the tumor in three planes, instead of being introduced under and around it in accordance with the English technic. The needling of the metastatic areas follows the British plan fairly closely. At first glance this technic appears to be much too intensive, since it produces a marked skin reaction and leaves an extensive fibrosis in the breast that does not compare favorably with the approximately normal organs that may be obtained with the English needles.

Fig. 2 (case 2).—Marked improvement of advanced squamous cell carcinoma of the cheek.

CARCINOMA OF THE RECTUM

Although operative procedures have saved many patients with early cancer of the rectum, the patients approach this type of surgical treatment with much dread, and an efficient irradiation technic would be most welcome to them. In the past I have not felt free to advise irradiation in operable cases. Gordon-Watson,[17] also connected with St. Bartholomew's Hospital, has made an extensive study of the weak, long needle technic for this type of malignancy and finds it a valuable aid. However, he said, "The results of treatment

14. Forber, Janet E.: Notes on the Statistical Analysis of the Cases, Brit. J. Surg. **19**: 479-480 (Jan.) 1932.

15. Lee, B. J., and Pack, G. T.: Irradiation of Mammary Cancer with Special Reference to Measured Tissue Dosage, Acta radiol. **12**: 416-454, 1931.

16. Pack, G. T.: The Interstitial Use of Gold Filtered Radon Transfixion Tubes in the Treatment of Mammary Cancer, Am. J. Roentgenol. **27**: 532-546 (April) 1932.

17. Gordon-Watson, Charles: Some Experiences in the Treatment of Carcinoma of the Rectum with Radium, Surg., Gynec. & Obst. **54**: 307-316 (Feb.) 1932; The Treatment of Carcinoma of the Rectum with Radium, Brit. J. Surg. **17**: 643-669, 1930.

are too uncertain to justify the use of radium as a routine measure in preference to radical surgery in those cases in which there is a reasonable prospect of successful radical surgery."

The needles are always placed outside the bowel about the base of the tumor and in the lymphatic channels. Radical surgical measures are often necessary as a preliminary treatment to expose the involved region sufficiently. In some cases the tumor is approached through the abdomen, while in others a portion of the sacrum is removed and the exposure is attempted from below. The needles are usually left in place for seven days and produce surprisingly little reaction. Gordon-Watson believes that inoperable cases may at times be made operable by this procedure, and that they are often improved whether a cure is possible or not. In his most hopeful cases the patients suffered from squamous cell carcinoma beginning in or near the anus, of the type illustrated by the following case:

CASE 4.—A man, aged 42, came to the hospital because of increasing weakness, a loss of weight of 12 pounds (5.4 Kg.), painful defecation and the passage of mucus and blood. A friable, malignant tumor, measuring 1 by 1½ inches (2.5 by 3.77 cm.), was found on the left rectal wall just inside the sphincter. Enlarged glands were felt in both groins. One of these glands, when removed by Dr. Curtice Rosser, was found to contain squamous cell carcinoma, grade III.

An incision was made into the left ischiorectal fossa alongside the tumor by Dr. Rosser, and ten 0.6 mg. platinum radium needles were planted in the back of the tumor. Six 1.33 mg. needles were then planted around the edges of the area. The wound was packed with gauze, and the needles were left in place for seven days. Full erythema doses of copper-filtered, high voltage roentgen rays were administered to each groin and were augmented by suberythema doses given with heavily filtered 50 mg. radium packs with a 2 cm. radium skin distance.

Sitz baths were used regularly after the radium was removed, and the wound healed in six weeks. There was no rectal pain or proctitis at any time. All the symptoms rapidly disappeared. At the end of one year and five months, the patient is still symptom-free and has gained a total of 15 pounds (6.8 Kg.). No glands are palpable in the groins, and Dr. Rosser reported nothing abnormal inside the rectum on proctoscopic examination. The sphincter works perfectly, and a colostomy has been avoided.

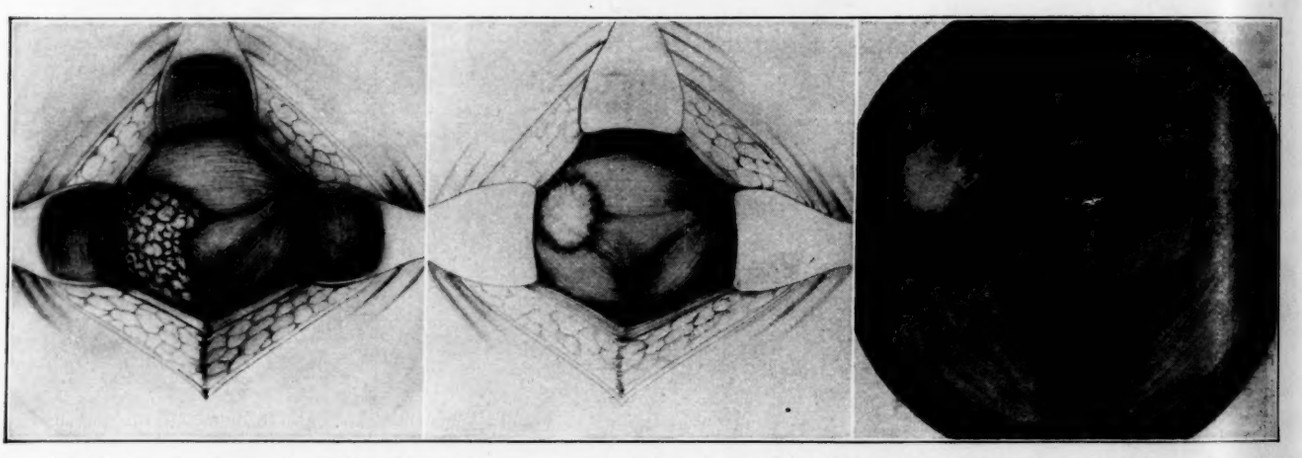

Fig. 6 (case 6).—Stages of resolution observed in large squamous cell carcinoma of the bladder. Coagulation and small radium needles were used with an excellent result.

CARCINOMA OF THE PROSTATE

Carcinoma of the prostate constitutes one of the most distressing types of a malignant process, since no method of treatment has produced an appreciable number of cures. Radium has been used in some form by Barringer,[18] Young,[19] Herbst[20] and others, with only palliation and relief of symptoms in most instances. A malignant growth of the prostate is highly radioresistant, and since it is situated in close proximity to the sensitve mucous membranes of the bladder and rectum, the factor of safety for normal tissues is small indeed. The type of radium therapy under consideration should therefore be suited for this location, and such has actually proved to be the case. Cade uses only the perineal approach, insisting that a cystitis will most certainly follow any implantation done through the bladder. However, since Laborde,[21] Herbst and others have used the transvesical method successfully, we decided to try it and have found it quite satisfactory. Cade leaves his needles in place for periods varying from eighteen to twenty-one days, but we have not had the courage to use such large doses in so precarious a location as yet. After the bladder is opened, long 1.33 mg. needles are pushed into the edges of the tumor at 1.5 cm. intervals, an effort being made to keep them as nearly parallel as possible. Extensions into the seminal vesicles and contiguous structures are needled in the same manner. Small needles may be used to advantage in these regions. A countersinking instrument is used to force each needle eye downward, so that it is situated at least one-fourth inch (0.64 cm.) below the mucosa. The bladder is packed with iodoform gauze, a suprapubic drain is put in place, and the needles are left in situ for seven or eight days. This dosage may be insufficient for a cure, but it has produced marked improvement in a small group of patients so treated, and ill effects such as cystitis, proctitis and urethritis have been noticeably absent. The following case is illustrative:

CASE 5.—A man, aged 69, came to the hospital for relief from frequency and pain in the lower part of the abdomen and the sacrum. His frequency was of many years' duration, but for several months he had often found it necessary to get up twenty-five times at night. For several weeks the pain had been quite severe, and he had lost a great deal of weight.

On Aug. 22, 1931, the bladder was opened by Dr. A. I. Folsom, who discovered a hard, hypertrophied, fixed prostate with extension upward in the region of the right seminal vesicle and beyond. No tissue was taken, but the diagnosis

18. Barringer, B. S.: Radium in the Treatment of Carcinoma of the Bladder and Prostate, J. A. M. A. **68**: 1227 (April 28) 1917.
19. Young, H. H.: Technique of Radium Treatment of Cancer of the Prostate and Seminal Vesicles, Surg., Gynec. & Obst. **34**: 93-98 (Jan.) 1922.
20. Herbst, R. H.: Blocking Lymphatics in the Control of Carcinoma of the Prostate Gland, J. A. M. A. **82**: 1590-1592 (May 17) 1924.
21. Laborde, S.: La curiéthérapie des cancers, Paris, Masson & Cie, 1925.

seemed evident. Sixteen radium needles of both the long and the short variety were planted according to the technic described and left in place for seven days. The patient was discharged on the twelfth day with a suprapubic drain in place.

Seven months later, an examination was made by Dr. Folsom, who reported that the patient looked and felt extremely well. He had gained a total of 40 pounds (18.1 Kg.) and was passing practically all of his urine in the normal way. The prostate was smaller and softer.

CARCINOMA OF THE BLADDER

Radiation therapy in cancer of the bladder has rapidly become popular, although the necessary care that must be exerted in protecting the sensitive normal mucosa has caused many to condemn it. The method has been strongly endorsed by Burnam and Neil,[22] Keyes,[23] Barringer,[24] Dean and Quimby[25] and others. Almost all these Americans use gold seeds alone or in combination with high voltage roentgen therapy, but the heavily filtered needles are well adapted for intravesical work and have produced good results with little or no reaction. Cade believes that even radon seeds, when used in the bladder, should have a wall thickness of 0.5 mm., but such implants are rarely if ever used in this country. The small element needles are too large for cystoscopic implantation, and a suprapubic approach with a good exposure of the neoplasm is a necessary preliminary procedure for their use. The bulky portion of the tumor is destroyed by electrocoagulation, and 0.6 mg. platinum needles are planted at 1 cm. intervals under the edges of its base. When the lesion is very large, long 1.33 mg. needles are more advantageous. The bladder is packed with iodoform gauze with a suprapubic drain in place, and the radium is left in situ for seven days. Convalescence is usually uneventful, and healing occurs in about two months with little scar formation. The following case illustrates the procedure:

CASE 6.—A man, aged 49, came to the hospital complaining of increasing hematuria of ten months' duration and recent frequency and pain in the pelvis and penis. On Aug. 4, 1930, the bladder was opened by Dr. A. I. Folsom, and a large friable tumor about the size of a lemon was discovered on the right anterior wall of the bladder. A biopsy specimen was diagnosed as squamous cell carcinoma. The greater portion of the mass was destroyed by electrocoagulation, and six 0.6 mg. platinum radium needles (an insufficient number) were planted radially in the base and left in place for seven days.

On November 6, the patient returned without symptoms and feeling much better. However, cystoscopy revealed a suspicious area in the region treated. The bladder was reopened, and a flat, reddish, friable mass of malignant tissue about ¾ inch (1.87 cm.) in diameter was discovered. Eleven 0.6 mg. platinum radium needles were carefully implanted at 1 cm. intervals under the edges of this mass and allowed to remain for seven days.

One year and nine months has elapsed since the first treatment, and the patient now looks and feels well. He has gained a total of 25 pounds (11.3 Kg.), and cystoscopy shows some pallor but no other abnormality at the site previously occupied by the tumor.

COMMENT

The low intensity needles have been used successfully in many other locations, such as the vulva, vagina, cervix, urethra and larynx. Two tumors involving the urethra have disappeared with no impairment of function following an encircling implantation. No claims of three or five year cures can be made as yet, and much experimentation will be needed to develop the most efficient needle arrangements. However, the rapid regression of malignant tumors and the rapid healing that follows their regression are strong arguments for the method.

Except in inaccessible locations where small trocars must be used for radon seen implantation, the needles have certain advantages over the American type of implants. The relative merits of the two types of applicators were fully discussed in a previous paper.[26] It has been my impression that the needles are somewhat more efficient than seeds, since a smaller total amount of radiant energy seems to be needed to bring about the resolution of a tumor of a given size. This discrepancy may in reality be due to the different arrangement of the radiant sources, but there is still a difference in efficiency to be considered. The needles, when properly placed, cannot be lost or aspirated and do not remain in the tissues as foreign bodies. Perhaps their biggest advantage lies in the accuracy with which a given pattern can be carried out. Roentgenograms made following implantation reveal errors of distribution which may be easily corrected. When seeds once leave the trocar they are fixed in position. No guy threads mark their locations, and it is often difficult to remember where each one is placed. The heavier filtration of the needles, which eliminates all beta irradiation, reduces the tissue reactions to a minimum and they may be used more freely than the implants in precarious positions as, for instance, in contact with the alveolar processes of the mandible and in close proximity to the cartilage of the ear. Some have objected to the needle technic because hospitalization for at least a week is required, but since it is often necessary to augment the method by contact radium applicators and high voltage roentgen therapy, which may be carried out during this time, the objection is not serious. The trend toward higher voltages and heavier filters in roentgen therapy is based on the principles laid down in this paper, and it is to be hoped that the results obtained will be as satisfactory as those observed following the changes in radium technic.

CONCLUSIONS

1. Modern developments in radium therapy are based on two facts: first, that radiation of great penetrating power and short wavelength has less necrotizing effect and a greater selectivity for radiosensitive cells than radiation of low penetration and long wavelength, and, second, that the selectivity of radiant energy for radiosensitive cells is increased when the duration of the exposure is increased with a corresponding decrease in intensity.

2. The implantation of multiple heavily filtered radium needles of low strength over long periods of time increases the margin of safety for normal tissue and causes the rapid regression of malignant tumors of a relatively high grade of radioresistance without sloughing.

ABSTRACT OF DISCUSSION

DR. MAURICE LENZ, New York: I agree with practically everything Dr. Martin has said regarding the superiority of the use of multiple, weakly charged, platinum filtered, radium needles as compared to the use of gold or platinum seeds or fewer old type, strongly charged, monel metal needles. The latter applicators produce more local necrosis and less distant

22. Burnam, C. F., and Neil, W., Jr.: The Treatment of Epithelial Tumors of the Bladder, Am. J. Roentgenol. **16**: 219-227 (Sept.) 1926.
23. Keyes, E. L.: Principles Governing the Local Treatment of Carcinoma of the Bladder, J. A. M. A. **90**: 350-352 (Feb. 4) 1928.
24. Barringer, B. S.: End-Results of Radium Removal of Carcinoma of the Bladder, J. A. M. A. **90**: 352-354 (Feb. 4) 1928.
25. Dean, A. L., Jr., and Quimby, E. H.: Radiation Therapy of Carcinoma of the Bladder, Surg., Gynec. & Obst. **53**: 89-96 (July) 1931.
26. Martin, Charles L.: Small Radium Needles Versus Radon Implants, Am. J. Roentgenol. **28**: 240-248 (Feb.) 1932.

effect than the former and are therefore less desirable. Dr. Failla was quoted as saying that the additional filtration is, from a physical standpoint, of little or no advantage. Clinically, however, there is less destruction of the normal tissues in the cases in which heavy filtration has been used than in those in which the filtration has been lighter. When a tumor that is several centimeters in thickness is to be irradiated, it is much easier to transfix its entire thickness with a radium needle of appropriate length than it is to space short seeds accurately. The use of short radium needles, in the irradiation of thick tumors, is objectionable for the same reason. There is a theoretical advantage in using radium element in preference to radon: Cancer cells vary in their sensitiveness to irradiation; some resistant cancer cells may remain after the first few days of irradiation. From a theoretical standpoint it would seem that these cancer cells would be more likely to withstand irradiation from a rapidly weakening source, such as radon, than if the unchanging strength of radium element should be used.

DR. WILLIAM E. COSTOLOW, Los Angeles: In the Soiland clinic we have used the low intensity radium element needles for about two years and a half. We have treated a large series of breast cases and our immediate results have been quite gratifying. However, in malignant tumors of the tongue we have had considerable difficulty. We have had considerable trauma produced in the tongue by the use of platinum filtered element needles. In some cases in which the needles have remained in place a week we have had infections that complicated matters considerably, possibly caused by the silk sutures that anchor the needles. We have felt that we have not been able to calculate the dosage as correctly when using these needles as we did in the use of the gold seeds. By following the tables of Dr. Quimby, we felt we could better calculate the dose with the gold seeds. By following Dr. Quimby's recent report we may now be able to calculate the dose from the platinum needles more satisfactorily. However, on account of the difficulties we have had, our primary results have not been as good from the use of the platinum needles in the tongue as they were from the gold seeds. As a consequence, we have returned to the use of gold seeds. In lesions on the surface, especially extensive skin involvements, as demonstrated by Dr. Martin, we have had excellent results; also in lesions that project from the surface. When it is possible to surround the lesion they are certainly very satisfactory and we believe superior to any method of irradiation that we have yet used. Also, around cartilage and even around bone, they can be used quite safely. Undoubtedly these needles have increased the effectiveness of radium therapy a great deal; however, in certain lesions, because of mechanical and anatomic difficulties, we still would prefer to use the needles in conjunction with the gold seeds.

DR. A. JAMES LARKIN, Chicago: I should like to say a word in the interest of gold seeds. For about two years I have been using gold implants of 0.5 mm. wall thickness. This filtration is practically equivalent to that of the needles under discussion. A minimum content per implant of 1.5 millicuries almost duplicates the needle dosage. Thus if the application of the needles offers marked difficulties, the gold seeds may serve as an alternative. The dosage delivered in seven days from 1.5 millicurie seeds corresponds closely to the dosage obtained from the needles of Dr. Martin. The two methods yield equally satisfactory clinical results.

DR. CHARLES L. MARTIN, Dallas, Texas: Dr. Costolow's objections have been raised by others in this country but I decidedly disagree with him. When one works gently the trauma produced is slight, and infections have not appeared in any of my mouth cases. Oral hygiene is, of course, most important. Soft sterile waxed dental floss is used for all sutures and guy threads, and the mouth is thoroughly washed out with antiseptic solutions three or four times daily. Following each washing the inside of the mouth is painted with 2 per cent solution of mercurochrome. Although Dr. Costolow states that better results can be obtained with seeds than with needles, I think Regaud's figures point in the opposite direction. My experience of only two years does not allow me to prepare statistics as yet but it is my belief that the needles have certain advantages over radon seeds.

COLOSTOMY, RADIATION THERAPY AND PERINEAL RESECTION FOR CANCER OF THE RECTUM

GEORGE E. BINKLEY, M.B. (TOR.)
NEW YORK

Each patient with rectal cancer presents a triple problem: recognition of disease, selection of appropriate treatment, and actual administration or carrying out of the treatment decided on.

The task of recognizing the disease usually rests with the family physician. Patients seldom seek surgical advice until a definite diagnosis has been determined. While the favorable influence of early recognition on results of treatment is well known, a comparatively small percentage of cases is referred for treatment in the early stages. There is a double explanation for this unsatisfactory state of affairs: first, the neglect of the patient to seek medical advice at the onset of illness and, second, failure of the clinician to recognize malignant disease.

The early symptoms of rectal cancer are mild and indefinite. They mimic symptoms commonly associated with nonmalignant pathologic conditions of the colon and rectum. With the exception of constipation, gas, flatulence and occasional showing of blood and mucus, rectal cancer seldom produces a distressing train of symptoms until the cancer has become a sloughing mass. Delayed diagnosis must be largely attributed to the failure of the clinician to recognize the seriousness of these early symptoms and to confirm or disprove his suspicion by rectal examination. Early recognition of rectal cancer will remain the exception, rather than the rule, until routine digital and proctoscopic examinations are included as a part of the general physical examination of all patients who present themselves for medical advice complaining of either subjective or objective symptoms suggesting a pathologic condition of the colon or rectum.

Selection of treatment involves careful consideration of the following factors: first, the patient's ability to withstand treatment; second, the location and accessibility of the tumors; third, the extent of disease (both local and distal), and fourth, degrees of malignancy, infection and radiosensitivity of the cancer. Analysis of these factors immediately suggest that selective treatment is preferable to routine methods. In other words, treatment must be fitted to the patient, rather than the patient submitted to any one method of procedure.

Treatment of this disease is usually considered under two headings, radical and palliative. Radical methods are reserved for those cases in which there is the possibility of clinical cure or a high degree of palliation. Radical treatment in the advanced stages is more likely to be detrimental than beneficial. The radical procedures proved to be of greatest value are the one-stage and two-stage abdominal perineal resections, the perineal resection preceded by colostomy and radical adequate radiation therapy. These procedures are carried out with slight variations of technic by different surgeons in the more favorable stages of rectal cancer.

While surgical extirpation of the rectum for cancer has been used for more than a century, radiation therapy has been employed for little more than a

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

decade; during this comparatively short period of time the advantages and limitations of the use of the physical agents have been fairly well demonstrated. Irradiation is not a panacea for all rectal cancers, but it is capable of producing clinical cures of many years' duration. Moreover, its field of usefulness is extended in moderately advanced cases by the employment of radical surgical removal as an adjunct to intensive radiation therapy.

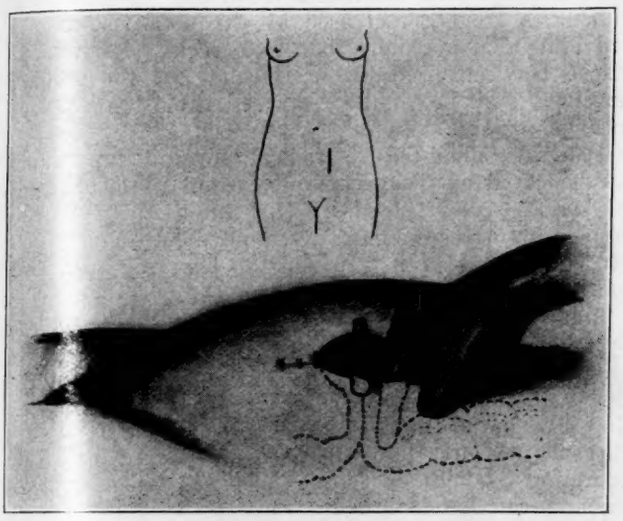

Fig. 1.—Colostomy is performed about midway between the umbilicus and the pubis through a left rectus incision. The wound is closed in layers, the remaining opening being sufficient to admit the index finger in addition to the two loops of sigmoid.

Colostomy, radiation therapy and perineal resection form a combination of technical procedures which appears to offer the greatest possibilities to a certain group of patients. This combined therapy has not been extensively employed, and it is questionable whether the additional advantages afforded are fully appreciated. By the use of the combined method, patients are given the benefit of two methods of treatment, namely, radiation therapy and perineal extirpation, either of which is capable of providing clinical cures in selected cases, but both of which may be found wanting when used alone. We have combined the two methods in a small group of cases, and feel that the percentage of clinical cures has been increased and that much greater palliation has been afforded in incurable cases. When preoperative therapy is used, it is impossible to estimate in a mathematical manner the improvement in results of the combined methods, but such results are clearly demonstrated by postoperative therapy, owing to the fact that there is definite proof of existing disease at the time when radium is given.

Cases selected for this combined form of therapy are those suitable for the perineal type of operation. Location of the tumor is important. Tumors of the lower part of the rectal and anal canal lend themselves well to this form of surgical procedure and also to intensive radiation therapy. Cancers of the upper portion of the rectum and of the rectal sigmoidal juncture are usually more efficiently treated by other technics. Clinical cures cannot be expected if the disease has spread beyond the reflexion of the pelvic peritoneum. Extensive local infiltration, however, can often be adequately cared for. The inefficiency of surgical resections usually lies either in the inability of the patient to withstand operation or the inability of the surgeons to remove all local disease. The so-termed "recurrences" are usually due to incomplete removals and not to a return of disease. The use of radiation therapy is a valuable asset to surgical intervention when all the malignant cells cannot be removed by dissection.

TECHNIC

The sequence of the different procedures used when colostomy, radiation therapy and perineal resection are employed may vary. Usually, preoperative therapy is the method of choice. Radiation therapy includes external irradiation consisting of high voltage roentgen rays and radium rays and interstitial irradiation by gold-filtered emanation seeds. The latter are implanted into the tumor mass or around the outlying areas. The first step of treatment may be external applications or the construction of the colostomy. In the majority of cases, the sequence of procedures has been as follows; first, external irradiation; second, colostomy; third, interstitial irradiation, and fourth, resection.

External irradiation would be the ideal method of radiation therapy if it were possible to supply a devitalizing dose to deep-seated tumors. Nevertheless, preoperative irradiation in limited dosage given by this method has a beneficial effect on both the patient and the tumor. The symptoms are reduced; an increased feeling of well-being is brought about, and many patients show a gain in weight and strength. These changes increase the patient's ability to withstand an operation. The effect on the tumor mass is demonstrated by a decrease or disappearance of the area of ulceration. The degree of infection is lessened. The tumor mass becomes smaller and more localized, and it is not unusual to find a marked change in movability. Such changes produce a more satisfactory field for the implantation of emanation seeds and facilitate thorough removal by determining the definite area of the malignant tissue.

External irradiation is administered over six portals of entry around the circumference of the pelvis and

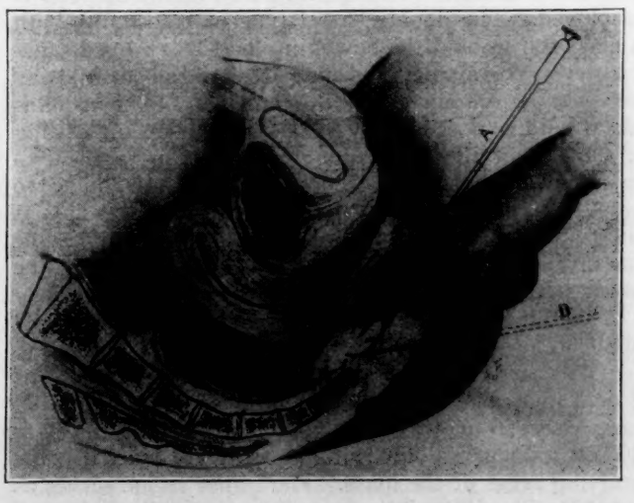

Fig. 2.—The implantation of gold seeds into tumors situated low in the rectum. The finger placed within the rectum guides the distribution. Needles may be inserted by way of the anal canal or through the perineum.

directed at the tumor mass. In low-lying tumors a perineal field is also employed. The dosage is usually a full erythema unit through each portal. Slight variations in the tolerance of the skin of various patients need not be seriously considered. High voltage roentgen rays, being more accessible and less expensive, usually constitute the bulk of preoperative therapy.

Radium, however, appears to exert a more striking clinical effect in a certain group of cases. External applications of radium are administered at a distance of 15 cm. from the skin by means of the 4 Gm. radium element pack; they are given daily or on alternate days, thereby completing the external treatment in about a fortnight.

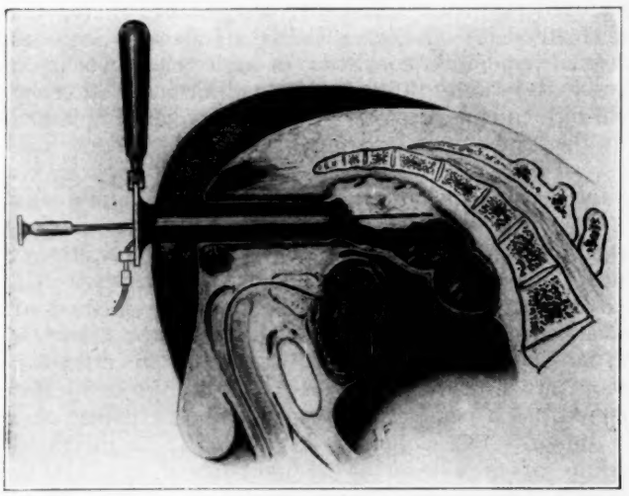

Fig. 3.—The implantation of gold seeds into the malignant tissue by direct vision through an electrically lighted speculum.

From one to six weeks after the completion of external applications, patients are admitted to the hospital for operation. This intermediary period allows for favorable general and local changes to take place. If external treatment has been given over the area at which the colostomy is to be constructed, operation should be delayed until the inflammatory reaction produced by the rays has subsided.

The colostomy is constructed under general or spinal anesthesia to allow for careful exploration of the abdominal cavity. A lower left, mid-rectus incision is employed. The double barrel type of colostomy, with a glass rod to hold the bowel in place, has proved satisfactory. The artificial opening is placed about midway between the symphysis and the umbilicus. The abdominal wound is closed in layers, a sufficient opening being left to admit the index finger in addition to the two loops of sigmoid. At times, it is an advantage to employ colostomy prior to radiation therapy. This is the routine followed when obstruction is a troublesome factor, and when radiation must be given over the lower part of the abdomen.

The third step of treatment, namely the interstitial application of radon seeds, is carried out from seven to ten days after the colostomy. Gold-filtered seeds, of 2 or 3 millicuries, are used. The total dosage required may vary from 40 to 80 millicuries (from 5,000 to 10,000 millicurie hours). The seeds are placed in the outlying areas of the mass. The tumor tissue serves as a holder for the radium in an attempt to devitalize all malignant cells that have invaded adjacent tissue. The importance of accurately placing the radon cannot be overemphasized. There is one definite object in view, namely, to provide sufficient dosage to the outlying malignant cells. Careful consideration must be given to the estimation of the total dosage, the strength and the distribution of the seeds. The operator should be familiar with the size and shape of the tumor and the extension of disease. Haphazard interstitial irradiation seldom adds any advantage to surgical removal. Massive dosage sufficient to affect the whole cancer may be employed, or the tissue treated may be limited to infiltrated areas. Seeds are implanted by the aid of long trochar needles, with the distribution determined by direct vision through an electrically lighted speculum or by the sense of touch, with the index finger placed within the rectum to guide the inserting needle.

The last step of combined treatment consists of surgical resection, usually carried out from seven to fourteen days after interstitial treatment. The surgical difficulties are not increased by preoperative therapy, providing that not more than two weeks is allowed to elapse between procedures. Healing of the wound, however, may be slightly retarded after the employment of massive dosage.

Patients submitted to radical surgical procedures are benefited by the preoperative transfusion of from 600 or 700 cc. of blood. Spinal anesthesia is usually employed for resection. The employment of these two procedures has been a means of lowering operative mortality in rectal cancer.

Our surgical technic differs little from that described by other authors. The position of the patient depends on the preference of the operator. The dorsal position with the feet in stirrups and the sand-bag under the pelvis permits a good exposure. Local or restricted surgical measures have a limited field; practically all operations should be radical, including the removal of the anal canal and the rectum and as wide an excision of the adjacent tissues as is possible. The coccyx may, or may not, be removed. Its removal sometimes facilitates more thorough dissection and provides for more adequate postoperative drainage from the hollow of the sacrum. The tissues in the ischiorectal fossae are widely excised, and the levatore muscles are divided near their origin. After the rectum is freed from its muscle attachments, the lateral ligaments are severed. The peritoneum anteriorly is stripped back from the anterior surface of the sigmoid, or the peritoneal cavity is opened and a new pelvic floor constructed. If a

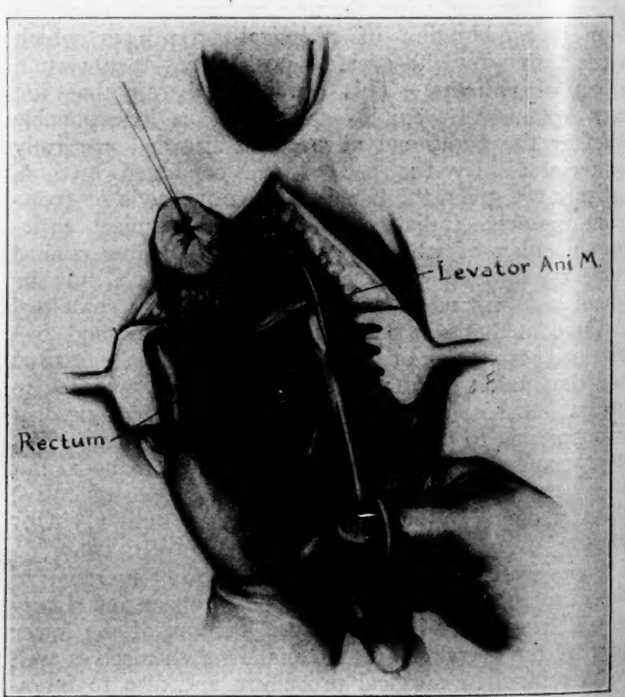

Fig. 4.—Wide dissection of the perirectal fat and the division of the levatores near their origin.

low, anterior culdesac is allowed to remain, prolapse of the terminal end of the bowel may occur. The bowel is amputated about 1½ or 2 inches below the new peritoneal floor, the ends being attached to the invaginated skin surface, forming a new anus. The posterior part of the wound is packed with a rubber glove filled with gauze, the edges of the skin being united by interrupted stitches.

The aforementioned four steps constitute the routine method. In a few instances we have employed only external irradiation omitting the implantation of gold seeds. These were selected cases in which either the tumor did not lend itself to satisfactory interstitial treatment or external radiation produced such a marked change that little additional advantage could be expected from intensive therapy.

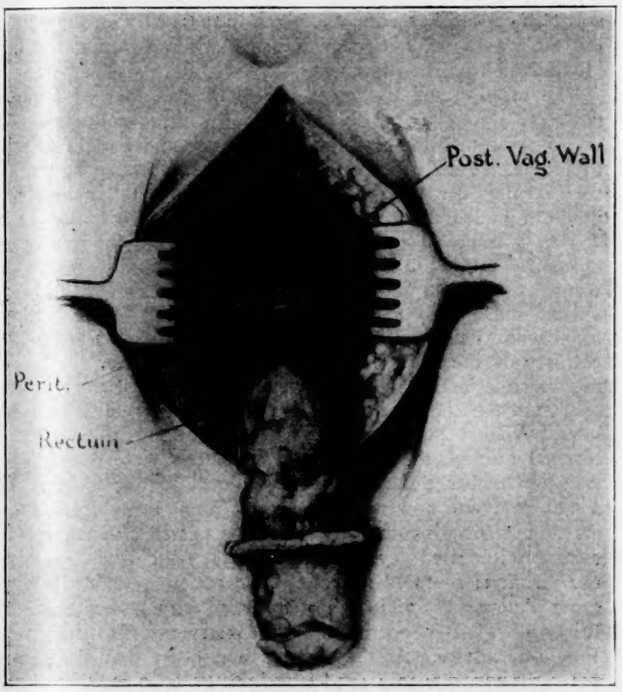

Fig. 5.—The peritoneum has been stripped back from the anterior surface of the sigmoid, forming a high culdesac. The bowel is amputated about from 1½ to 2 inches below the new pelvic floor.

There is another technic of the combined treatment, namely, postoperative radium therapy. This need not be used as a routine after surgical dissection but only when there is a probability that all the diseased tissue has not been removed. Perineal resections for rectal cancer in properly selected cases are accompanied by gratifying results. However, when removal is incomplete, the appropriate use of the physical agents, at, or shortly after operation, is very beneficial. Cases in which the operator feels that all malignant tissue has not been removed are treated with gold seeds at operation. In hospitals where emanation seeds are not immediately available, they should be employed as soon as the condition of the wound permits. External irradiation may be added at a subsequent date if this form of therapy appears advantageous.

RESULTS

From 1924 to 1931 inclusive, forty-two patients, twenty-one of whom were males and twenty-one, females, were treated by the combined method. The ages varied from 30 to 72 years.

The results obtained appear to warrant continuation of this form of therapy in selected cases. Many of the cases could not be classified as favorable operable cases. These patients were given the combined treatment because it was thought to offer the greatest possibilities. In twenty-seven instances there was gross extension beyond the rectal wall. Definite fixation of the tumor was present in five cases and partial fixation in eighteen, while in nineteen the cancers were considered freely movable. Mobility, however, is a poor criterion as to the extent of disease when the tumors are located in the lower part of the rectum and anal canal. Three patients with highly malignant tumors had undoubtedly widespread unrecognized metastases at the time treatment was commenced, and therefore should not have been subjected to these radical procedures. In five instances, operation was performed for relief from pain or removal of a large sloughing mass.

Only two deaths among the forty-two patients operated on occurred while they were in the hospital; that is, the operative mortality was only 4.8 per cent. These figures demonstrate that the use of preoperative radiation therapy does not increase operative mortality. One of the patients died of intestinal obstruction, the other, of pelvic peritonitis.

Although sufficient time has not elapsed to bring all cases within the five year limit, we have at present 56 per cent of five year clinical cures in the sixteen patients treated prior to 1927. Seven of them are alive and well and two others were known to be alive at the end of five years. One of them was lost from observation and the other died of pneumonia. The other twenty-six have been treated within the past five years; sixteen of them are alive and well; the other ten are dead; three died of intercurrent disease, not of cancer. The duration of life of those dying of cancer varied from four months to four and one half years.

ABSTRACT OF DISCUSSION

DR. CURTICE ROSSER, Dallas, Texas: The point that interests me in Dr. Binkley's presentation is his plan for radium implantation some time before his operative procedure rather than just following it. It has appeared to me purely from the mechanical side that since he is attempting to protect especially the outlying neighborhood, the levators, for instance, it would be simpler mechanically at the time the rectum is removed to implant needles in exactly the position he wanted them, rather than do it some weeks or months beforehand and then wait to proceed with the operative steps. I can see, however, that if some shrinkage of the growth or some cleaning up of the inflammatory phase of the growth is to be obtained by the method which he describes, that might perhaps overcome the other factors of loss of time and mechanical complexity. I think that for too long, perhaps, it has been assumed that all malignant tumors should be handled one way or another way, and this description of the work being done at New York Memorial Hospital with the idea of using both of these splendid factors in the alleviation of rectal cancer is an assuring and definitely favorable step.

DR. DUDLEY A. SMITH, San Francisco: I have been greatly interested in Dr. Binkley's work at the Memorial Hospital and I think that, if the same facilities and the same technical ability were available in other centers, many more cases of cancer of the rectum would be amenable to treatment by radiotherapy. I believe, however, that in the present state of our knowledge and perhaps I should say in the present state of the undersupply of radium and apparatus, radiation treatment of cancer is not likely to be so favorable in other centers. With regard to the operative treatment of cancer of the rectum, it should be emphasized that in all the cases in which the patient is in sufficiently good condition to stand the more radical procedure, the abdominoperineal resection in which operation the zone of upward spread (that is to say, the lymph node involvement in

the mesosigmoid) is removed, there will be a much smaller percentage of recurrence than in the operation of posterior resection which Dr. Binkley has illustrated. I feel that we should emphasize that the operation of preliminary colostomy with posterior resection in cancer of the rectum should be limited to the patients who are not able to withstand a more radical procedure owing to their age or to other debilitating conditions.

DR. GEORGE E. BINKLEY, New York: Although Dr. Smith does not have access to gold filtered radon seeds, I think he would be greatly impressed by the effect produced by substantial dosage of preoperative high voltage roentgen rays in the more advanced operable cases. The changes that take place from external therapy are surprising to one unfamiliar with the use of the physical agents. In most cases only a sublethal dose can be administered to the tumor by external applications. However, one patient has remained clinically free of rectal cancer for more than four years following this type of therapy alone. If one can decrease the infection and obtain a 25 per cent reduction in the size of the tumor, complete removal of the disease is greatly facilitated in many instances. Preoperative interstitial therapy is preferable to postoperative therapy, as the tumor is used as a holder for the radium. Any group of nonirradiated malignant cells allowed to remain is sure to cause trouble. I think Dr. Rosser will agree that it is extremely difficult to recognize a small area of malignant tissue after the rectum has been separated from its normal attachments. In using postoperative irradiation, suspicious areas are marked during the dissection and the radon seeds implanted as the terminal part of the operation. If the procedure is not carried out at this time, it may be necessary to wait a few weeks before the area of malignant tissue can be recognized.

STREPTOCOCCIC MENINGITIS WITH INTRACAROTID TREATMENT AND RECOVERY

REPORT OF TWO CASES

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AND
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It requires no lengthy discussion to substantiate the statement that purulent meningitis of otitic origin is ordinarily viewed with extreme gravity and is more often fatal than not. The mortality from this desperate complication reaches well over 90 per cent. Yerger,[1] reviewing the statistics of Cook County Hospital on meningitis for a ten year period in 1922, found sixty-three cases of otitic origin with two recoveries, or a mortality of 97 per cent. It would seem, then, that in such a deadly, hopeless disease with its high frequency, any form of therapy, no matter how desperate, is worthy of trial. We report two cases of purulent meningitis of otitic origin occurring in the service of one of us (M. S. E.) at the Mount Sinai Hospital, in which intracarotid injections mainly were responsible for recovery. One is a proved case of streptococcic meningitis, and the other a purulent meningitis in which a gram positive diplococcus was obtained on smear but not on culture but which, from the evidence presented, may be considered also of streptococcic origin.

CASE 1.—A. W., a white man, aged 21, was admitted to the Mount Sinai Hospital, Aug. 14, 1931, complaining of nasal obstruction, headache and pain in the right ear and jaw. The temperature was 102 F.; the leukocyte count was 16,300, with 85 per cent polymorphonuclears. Other laboratory observations, including a blood culture, were negative. August 15, the right ear drum was punctured with resulting relief of the symptoms and a drop of temperature to 99 F. August 19, there was roentgen evidence of acute mastoiditis. The patient was comfortable until August 20, when the temperature rose from normal to 102 F., the leukocyte count jumped to 25,500, with 98 per cent polymorphonuclears, and he exhibited nuchal rigidity, bilateral Kernig's sign, right mastoid tenderness, and a pus discharge from the nares. The eyeground determination was normal. Lumbar puncture revealed cloudy spinal fluid, under increased pressure, containing 2,250 white blood cells, with nearly 100 per cent polymorphonuclears. On smear a gram positive intracellular diplococcus was identified. Because of the gravity of the case, a definite purulent meningitis of otitic origin with organisms in the spinal fluid, the senior author, in addition to a right mastoidectomy, exposed the right common carotid artery for repeated injection of medication. Antimeningococcic serum was given intraspinally on the operating table as a precautionary measure while awaiting the final identification of the organism.

The program of treatment instituted was that of frequent daily taps, four a day to start, bidaily intracarotid injections of 0.5 per cent solution of acriflavine base and Pregl's solution of iodine,[2] 10 cc. of each, alternating every twelve hours, and concentrated dextrose given intravenously with limited fluid intake for dehydration purposes. One blood transfusion of 250 cc. was given, and because a culture from the mastoid at operation yielded a hemolytic streptococcus, antistreptococcic serum was given once intraspinally. The patient did well almost immediately after operation. Spinal tap once disclosed 6,000 white blood cells with the same organism on smear, but cultures of the fluid remained sterile. Thereafter the lumbar taps became increasingly clearer, so that within two days after operation the cell count was 71 and fell to normal a few days later. August 28, seven days after operation, the temperature reached normal, the intracarotid injections were discontinued, and the lumbar punctures were confined to one a day. The spinal fluid was now normal, the cell count being from 2 to 3, and the leukocyte count 9,700, with 63 per cent polymorphonuclears. Repeated eyeground, visual field and neurologic examinations revealed nothing. The patient remained afebrile from August 28 and was discharged cured, September 19, thirty days after operation, with instructions to return for follow-up advice. At the present time, other than deafness of the right ear, due to a dead labyrinth, he is in excellent health and has been free from all complaints since his discharge.

It is unfortunate that we were unable to obtain a culture of the organism in the spinal fluid. Two different smears, one before and one immediately after operation, revealed the organism, but both times the cultures were sterile. Because it was a coccus of the gram positive type, contamination of the skin must be considered but can easily be eliminated because the organisms were found on two occasions and because they were found intracellularly within leukocytes, which definitely proves their presence in the spinal fluid. However, since a culture from the mastoid at operation revealed hemolytic streptococci, and two smears from the spinal fluid showed a gram positive diplococcus which may be a form of streptococcus, this case may well be considered a meningitis of streptococcic origin. Whether the continued drainage, the one dose of antistreptococcic serum used, and the one blood transfusion administered were factors in the patient's recovery we cannot say, but we do feel that the intracarotid injections twice a day for seven days was the outstanding single therapeutic measure in his recovery. We cannot help but be impressed with the rapid improvement of

From the Mount Sinai Hospital.
Read before the Mount Sinai Hospital Clinical Society, April 19, 1932.

1. Yerger, C. F.: Meningitis of Otitic Origin, J. A. M. A. **79**: 1924 (Dec. 2) 1922.

2. Pregl's solution—a colloidal iodine solution, representing an aqueous soluble compound containing from 0.035 to 0.040 per cent of free iodine and different iodine salts.

the patient almost immediately after the institution of intracarotid therapy, the amelioration of symptoms, the fall in temperature, and, even more striking, the change in the spinal fluid from a purulent one with 6,000 white blood cells and a positive organism to a clear sterile one with only a few white blood cells. We feel that we can discount the other measures used here and attribute this cure to intracarotid therapy.

The next case is even more convincing:

CASE 2.—R. C., a white woman, aged 19, was admitted to the Mount Sinai Hospital, Nov. 28, 1931. Three weeks previously the right ear drum had been incised for pain and fever, since which time it had been draining purulent material. One week before admission a terrific pain developed over the right side of the head, which persisted. On the day of admission she vomited three times and the temperature rose to 103 F. When she entered the hospital she was markedly toxic; she was clear mentally but displayed rigidity of the neck, positive Kernig and Brudzinski signs, absent knee and ankle jerks, and marked skeletal muscular hypotonia with slight left sided facial weakness. The right ear drum was violently inflamed; there was an acute mastoiditis with an acute frontal sinusitis. The leukocyte count was 21,400, with 92 per cent polymorphonuclears. Chemical examination, blood culture and Wassermann tests were negative. A roentgenogram suggested right sided mastoiditis with beginning necrosis. The eyegrounds were normal. Lumbar puncture revealed the spinal fluid cloudy, under increased pressure, with a count of 1,600 white blood cells, nearly all polymorphonuclears. Direct smear was positive for gram positive cocci in chains. Immediate right mastoidectomy was done with exposure of the dura and lateral sinus. The following day, November 29, the temperature rose to 105 F.; headache and rigidity of the neck were intense. A lumbar tap revealed cloudy fluid under more marked pressure, containing 3,300 white blood cells, and was again positive for streptococci on smear. November 30, a forty-eight hour culture of the original spinal fluid taken before operation was returned densely positive for hemolytic streptococci. The general condition of the patient was worse. She was now stuporous and the meningeal signs were more advanced. Because of the hopelessness of the case and the almost certain fatality, once a diagnosis of streptococcic meningitis is made, the senior author exposed both common carotid arteries under local anesthesia (procaine hydrochloride, 1 per cent) in order to administer medication directly into the circulation of the brain and meninges.

The program of treatment instituted consisted of intracarotid injections of 10 cc. each of 0.5 per cent solution of acriflavine base and colloidal solution of iodine twice daily, alternating every twelve hours; lumbar taps were done four times a day; brain dehydration was effected by concentrated dextrose intravenously and by limitation of fluid intake; blood transfusions and intramuscular injections of antistreptococcic serum were done every other day. The night after two intracarotid injections were given the general condition of the patient improved, stupor disappeared and the mentality cleared; the spinal fluid was not as cloudy and the count dropped to 1,200 white blood cells. The following morning the temperature dropped from 105 to 99 F., although the headache and rigidity of the neck continued. A second culture of the spinal fluid, taken immediately before exposure of the carotid arteries, returned now again heavily loaded with hemolytic streptococci. The temperature assumed a level of 100 to 101 F. daily, and the general condition was decidedly better. December 2, two days after exposure of the carotid arteries, the patient exhibited a palsy of the sixth nerve on the right side with a left pupillary dilatation. December 5, five days after operation, there was complete recovery of the right sixth nerve with partial paresis of the left sixth nerve with normal eyegrounds. The spinal fluid was now almost clear, with a count of only 200 cells, and all cultures had been sterile since the institution of intracarotid treatment. The meningeal signs cleared; only slight nuchal rigidity remained, which was ascribed to edema of the neck. The intracarotid injections were now discontinued and the lumbar taps reduced to two a day. December 6, six days after operation, all eye signs disappeared. December 16, sixteen days after operation, the temperature reached normal and remained normal with an occasional rise to 99 or 100 F., accounted for once by myringitis of the other ear drum and at other times by the pansinusitis. The spinal fluid on this date was sterile and contained 17 white blood cells with normal pressure; the blood leukocyte count was 10,600, with 69 per cent polymorphonuclears. Twenty days after operation the spinal fluid contained from 1 to 3 white blood cells and remained perfectly normal thereafter for two weeks, after which time taps were discontinued.

The patient occasionally complained of headache and vomited and, although the eyegrounds were normal, the visual fields showed a left homonymous hemianopia, Jan. 13, 1932, which was forty-four days after operation, when we considered her condition as almost cured. Diagnostic lumbar tap was again normal, and temporary restriction of fluids relieved her headache, from which time she was symptom free. However, she was kept under careful observation for development of brain abscess. Repeated examination of the eyegrounds remained negative and the visual fields on February 3, 9 and 19 were entirely normal, the hemianopia having completely disappeared. She was discharged, February 19, eighty days after operation, having been ambulatory the last five weeks of her hospital stay. At the present time she is in excellent health, carrying out her daily duties at work; she has gained 12 pounds (5.4 Kg.) and is free from all complaints.

COMMENT

The recovery in streptococcic meningitis with its terrifically high mortality in itself is sufficiently rare to be worthy for record. There are, to date, forty-six records of cured cases in the literature prior to this report. The methods used to effect cure in these cases were carefully tabulated by Rosenberg and Nottley [3] up to 1931 in forty-one of them, and by Appelbaum,[4] in 1932, who added five additional cases, bringing the literature to date. They are shown in the accompanying table.

Methods Used to Effect Cure

Mastoidectomy	6
Mastoidectomy and lumbar taps	7
Lumbar taps alone	8
Lumbar taps and antistreptococcic serum	2
Antistreptococcic serum alone	4
Dural drainage	2
Laminectomy	3
Mastoidectomy and labyrinthotomy	1
Lumbar taps and jugular ligation	1
Surgical drainage	2
Lumbar taps and antimeningococcic serum	3
Antimeningococcic serum alone	2
Lumbar taps, chemicals intravenously and intraspinally	3
Mastoidectomy, cisternal taps, chemicals, antistreptococcic serum	1

The multiplicity of the measures employed only proves the absence of any specific one. Dandy [5] advises early continuous drainage of the cisterna magna; Barr [6] irrigates the sylvanian area to the cistern; Day [7] washes out the ventricles to the lumbar area; Murphy [8] drained from the lumbar area to the cistern; Eagleton [9] makes multiple openings in the cortex and irrigates to the cistern, and Horsley,[10] as far back as 1890, advised laminectomy with continuous drainage. Results in

3. Rosenberg, Lester, and Nottley, H. W.: Recovery from Streptococcic Meningitis, Ann. Int. Med. **4**: 1154-1182 (March) 1931.
4. Appelbaum, Emanuel: Streptococcic Meningitis: Recovery of Three Cases, J. A. M. A. **98**: 1253 (April 9) 1932.
5. Dandy, W. E.: Treatment of Staphylococcic and Streptococcic Meningitis by Continuous Drainage of Cisterna Magna, Surg., Gynec. & Obst. **39**: 760 (Dec.) 1924.
6. Barr, J. S.: Experiments Bearing upon the Practicability of Treating Meningitis by Means of Lavage of the Cerebrospinal Subarachnoid Spaces, Brit. M. J. **2**: 1687, 1910.
7. Day, E. W.: Indications for and Results of Operative Treatment of Otitic Meningitis, Surg., Gynec. & Obst. **16**: 369, 1913.
8. Murphy, J. B.: Neurologic Surgery, Surg., Gynec. & Obst. **4**: 385, 1907.
9. Eagleton, W. P.: The Surgical Treatment of Meningitis, J. A. M. A. **83**: 1900 (Dec. 13) 1924.
10. Horsley, Victor: Surgery of the Nervous System, Brit. M. J. **2**: 1286, 1890.

operative procedures, according to Neal,[11] are disappointing, as shown by Haynes and Kopetsky in six unsuccessful cases, wherein cerebellar decompression with drainage through the cortex was attempted. In addition, as remarked by Dandy, "Although the mortality is extremely high spontaneous cures do occur," which only accentuates the lack of definite treatment.

Kolmer, Rule and Madden [12] have reported excellent results in the treatment of streptococcic meningitis in experimental animals by the injection of acriflavine base and colloidal solution of iodine into the carotid arteries, which technic was followed in our two cases. These two agents, as shown by Kolmer, have a special affinity for gram positive cocci.

To our knowledge, these are the first cured cases of hemolytic streptococcic meningitis in which intracarotid injections were employed in the treatment. Exactly how great a part these injections played in the recovery we cannot accurately estimate because spinal drainage, antistreptococcic serums and blood transfusions were used in addition. However, we do know that the latter measures are employed almost as a routine in all cases of streptococcic meningitis and that the mortality still ranges between 97 and 100 per cent.

An interesting feature worthy of note occurred in our second case. On the fourth day after operation we encountered great difficulty in injecting the right common carotid artery. This was about the time that the sixth nerve palsy, partial facial palsy, and paralysis of the left twelfth nerve occurred. From these two facts it may be speculated that the nerve palsies may have been due to ischemia of the right side of the brain caused by a thrombus formation on the intima of the right common carotid artery induced by the injections. The eye signs cleared with the cessation of injections of this artery, which would tend to bear out this statement. It is also not unlikely that the partial thrombosis of this artery aided in the treatment by temporarily putting that side of the brain at rest, thus lessening the intracranial pressure locally on the right side, where in all likelihood the meningitis originated, since the mastoiditis was of right sided origin. The thrombosis was gradual in formation, and it was our feeling at the time that the colloidal solution of iodine was a factor in its production.

Another point worthy of mention in the second case is the manner in which cerebral dehydration, effected by restriction of fluid intake and concentrated dextrose intravenously, lessened the manifestations of increased intracranial pressure. Some forty days after operation, when we considered the patient out of danger, headache and vomiting developed, and a left homonymous hemianopia appeared. She was on a full diet at the time with no restrictions. Immediate limitation of fluids and the administration of concentrated dextrose intravenously were sufficient to cause disappearance of the entire syndrome of cerebral pressure.

The intracarotid method for the introduction of medication was first employed in this country by Hirsch, Meyerson and Halloran [13] in 1925 to inject arsenicals in the treatment of dementia paralytica. Experimentally, Kolmer used it in animals with great safety and simplicity and found an intense concentration of the drugs occurring in the meninges where their local effect was desired, although the toxicity of the drugs was no higher than if given intravenously.[14] In both our cases almost immediate improvement was noted within the first twenty-four hours after intracarotid injections; purulent cerebrospinal fluids laden with organisms were rendered sterile and clear, a point of extreme importance, denoting the promptness with which the drugs were delivered to the site of the disease.

Further to substantiate this statement, the spinal fluid was discolored a deep yellow and remained so as long as we administered acriflavine base into the carotid arteries. Whatever the physical process was by which it entered the cerebrospinal fluid from the arteries, we do not know. Nevertheless, the spinal fluid was yellow as long as acriflavine was given and it returned to normal with the discontinuance of the drug.

Kolmer [15] effected from 30 to 66 per cent of cures in pneumococcic meningitis in animals with this treatment. It was not carried out for meningitis in human beings until 1929, when it was tried in eight cases of streptococcic meningitis with no recoveries. However, all these patients were moribund to begin with, although five in the first forty-eight hours appeared as if they might get well. McMahon reported the first cure in pneumococcic meningitis with its use. It was attempted in three other cases, but all the patients died. Crawford [16] reported a case of staphylococcic meningitis in 1930 with cure by its use.

True enough, the intracarotid method of treatment is not a specific; but it is an improvement and offers another hope in the management of these desperate cases. It has advantages over intraspinal and intravenous medication by concentrated and immediate contact with the meninges, as shown by the prompt improvement in the cell count and bacterial content of the affected spinal fluids. The success of its use in these two almost hopeless cases against the nearly 100 per cent mortality of the disease warrants its further trial in cases in which the cerebrospinal fluid contains enough cells to render it cloudy and give an organism on culture, or wherever it is felt that meningeal infection is spreading and where radical measures offer the only hope. However, it must be instituted early to be of benefit. Its indications must not be confused with cerebrospinal hydrorrhea occasionally seen in otitis media and early mastoiditis due to disturbances in the basal venous circulation and evidenced by meningeal irritation, increased spinal manometric readings, edema of the optic nerve head, and spinal fluids with cell counts varying from several to several thousand. These cases present no organisms in the spinal fluid and respond to simple dehydration and lumbar puncture. Here intracarotid injections would not be indicated.

Both our cases presented, in addition, a violent pansinusitis. We wish to stress the necessity for treatment of the nose and accessory sinuses. The latter may well be a secondary focus of the meningitis.

SUMMARY

Two cases of hemolytic streptococcic meningitis of otitic origin are presented in which cure by intracarotid treatment was obtained. Mastoidectomy was performed

11. Neal, Josephine B., and Jones, Archibald: Streptococcic Meningitis Following Scarlet Fever with Recovery, Arch. Pediat. **44**: 395 (June) 1927. Neal, Josephine B.: Meningitis, Distribution According to Age and Etiology, J. A. M. A. **82**: 1429 (May 3) 1924.

12. Kolmer, J. A.; Rule, Anna M., and Madden, Bernard: The Chemotherapy and Serum Treatment of Pneumococcus and Streptococcus Meningitis, Arch. Otolaryn. **9**: 428 (April) 1929.

13. Hirsch, H. L.; Meyerson, Abraham, and Halloran, R. D.: The Intracarotid Route in the Treatment of General Paresis, Boston M. & S. J. **192**: 713 (April 9) 1925.

14. Kolmer, J. A.: The Intracarotid Method of Treatment for Meningitis with Recoveries, J. A. M. A. **96**: 1358 (April 25) 1931.

15. Kolmer, J. A.: Pneumococcus and Streptococcus Meningitis, J. A. M. A. **92**: 874 (March 16) 1929.

16. Crawford, A. S.: Intracarotid Treatment of Meningitis and Experiments with Pregl's Iodine, Tr. A. Resid. & ex-Resid. Physicians, Mayo Clin. (1929) **10**: 129, 1930.

in both, and blood transfusions, frequent lumbar taps and antistreptococcic serum were used as adjuncts in the treatment. Cerebral dehydration was used to great advantage in both cases. Energetic nasal treatment is essential if a successful outcome is to be attained. Forty-six cases of streptococcic meningitis with recovery are listed in the literature prior to this report.

Whenever meningitis complicates an otologic condition, intracarotid therapy after the method of Kolmer is advocated early without delay, along with other treatment as a simple harmless measure offering some hope in the treatment of an almost hopeless disease.

1915 Spruce Street.

ANATOMIC BASIS OF CLINICAL MANIFESTATIONS OF CEREBRAL VASCULAR DISORDERS

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Recent investigations of the cerebral circulation and the discovery of the nerve control of the pial and the cerebral vessels have aroused new interest in the manifestations of cerebral vascular disorders. Pfeifer [1] and Cobb [2] have disproved the old theory of end-arteries in the brain; in fact, they have demonstrated conclusively that the capillary bed of the whole cerebral cortex is an endless network, and that there is a free anastomosis between the capillaries of both the surface and the depth of the brain. Hassin [3] has again called attention to the presence of nerve endings in the pial vessels, and Penfield [4] has shown that the intracerebral arteries are innervated in a manner similar to that of the blood vessels of the pia, and, moreover, that the two nerve plexuses are continuous. Forbes and Wolff [5] have demonstrated that the nerve supply of the vessels of the brain is derived from the sympathetic system, and that stimulation of the vagus causes dilatation of the vessels and stimulation of the sympathetic causes their constriction. These facts are of prime importance in the evaluation of the signs and symptoms of the various cerebral vascular disorders.

Cerebral arteriosclerosis is the most common of the cerebral vascular disorders. It has been commonly accepted that this condition occurs most frequently in persons of superior intelligence. If one is to assume that there is a close relationship between excessive function and wear and tear of an organ, it is logical to infer that those who are particularly engaged in continuous cerebration must necessarily draw a large amount of blood to the brain, causing the cerebral vessels to function excessively. Emphasis has been placed on the strain of modern civilization as a factor in producing cerebral arteriosclerosis. The stress and strain of modern life, as reflected in anxiety, worry and emotional tension, must be expressed through the vegetative nervous system, and, consequently, on the cerebral vascular system through the action by the vagus and sympathetic systems. Heredity is regarded as playing an etiologic rôle. Another consideration in cerebral arteriosclerosis is the Virchow-Robin lymphatic system of the brain. While there is still considerable dispute as to the presence of the Virchow-Robin lymph spaces in the adventitial sheaths of the cerebral arteries, many who have worked with neuropathologic material are convinced that such a system exists. If, therefore, cerebral arteriosclerosis is found more frequently in those who pursue intellectual work and especially if it is apt to accompany the stress and strain of modern life, it is reasonable to assume that the lymphatic system of the brain must carry away excessive amounts of catabolic substances that may prove a source of irritation to the vessel wall and may start a train of physical and chemical changes that may lead to anatomically proved arteriosclerosis.

People with cerebral arteriosclerosis generally complain of headache, dizziness, ringing in the ears, a knocking sensation in the head, a fulness in the head and an inability to concentrate. They are usually irritable persons. The sclerotic artery is unable to relax adequately before the oncoming blood stream and transmits the impact of the blood column directly to the adjacent brain tissue. The continuous pounding of the blood stream on the brain tissue through the sclerosed artery causes irritation of the nerve tissue. Moreover, the Virchow-Robin lymph channel, being handicapped by the arteriosclerotic changes in the vessel walls, is no longer as efficient a drainage system as in normal persons, and this may result in retaining toxic and irritating catabolic substances in the brain. The sclerosed internal carotid artery, passing through the petrous portion of the temporal bone, may prove a source of irritation to the cochlear and vestibular nerves, and may be in part responsible for the dizziness, the knocking sensation and the ringing in the ears of which these persons complain.

The sclerotic process may involve only the large arteries, the smaller ones or both. When the large arteries are involved, the vessels may be uniformly sclerosed or the plaques may occur in only a few areas on the walls. Cerebral arteriosclerosis is indeed capricious in its distribution. Arteriosclerosis of the larger arteries is generally accompanied by physical manifestations such as pareses, paralyses and anesthesias. When the smaller vessels are chiefly involved, mental symptoms are apt to occur, such as memory impairment, emotional deterioration and periods of confusion, resulting in true psychotic conditions. These are particularly likely to occur in arteriosclerosis of the finer subcortical vessels, resulting in nutritional disturbances of the subcortex, leading to degenerative changes and producing marked intellectual deterioration, episodes of confusion, profound memory impairment, speech disorders, and finally manifestations of focal brain lesions such as aphasia, agraphia, monoplegia, hemiplegia, visual field disturbances and paralyses of the eye muscles, terminating in complete physical and mental deterioration characteristic of chronic [6] progressive vascular subcortical encephalopathy.

Cerebral thrombosis results from the gradual occlusion of a cerebral vessel. It is a natural sequence to cerebral arteriosclerosis and is the dominant lesion in cerebral vascular syphilis. A mild or severe systemic infection and chronic wasting diseases may be

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2. Cobb, Stanley: The Cerebral Circulation: The Question of "End-Arteries" of the Brain and the Mechanism of Infarction, Arch. Neurol. & Psychiat. **25**: 273 (Feb.) 1931.
3. Hassin, G. B.: The Nerve Supply of the Cerebral Blood Vessels: A Histologic Study, Arch. Neurol. & Psychiat. **22**: 375 (Aug.) 1929.
4. Penfield, Wilder: Intracerebral Vascular Nerves, Arch. Neurol. & Psychiat. **27**: 30 (Jan.) 1932.
5. Forbes, H. S., and Wolff, H. G.: Cerebral Circulation: III. The Vasomotor Control of Cerebral Vessels, Arch. Neurol. & Psychiat. **19**: 1057 (June) 1928.
6. Binswanger, O.: Die Abgrenzung der allgemeinen progressiven Paralyse, Berl. klin. Wchnschr. **31**: 1187, 1894.

its precursors. Thrombosis generally occurs at a time when there is a tendency toward slowing of the circulation [7] and, therefore, in the early hours of the morning. Usually there are prodromal symptoms in the nature of headache and of dizziness, owing to inadequate cerebral blood supply caused by the partially occluded vessel, resulting in anoxemia and edema. Many patients with frank thrombosis have had in the preceding weeks attacks of transitory numbness or paresis of the face or of the hands or feet. These may have been due either to cerebral vascular spasm or, more likely, to a partial thrombosis with resultant disturbance in function, which improves as a result of a vasomotor reflex that increases cardiac activity and systemic blood pressure and improves cerebral circulation, restoring adequate blood supply through the partially occluded vessel.

While cerebral thrombosis generally manifests itself in some motor paralysis or sensory disturbance, there are vessels in other regions of the brain that are frequently the seat of thrombosis, and the only clinical manifestations present are subjective complaints of headache, dizziness or vomiting. These types of

Fig. 1.—Massive cerebral thrombosis.

thromboses are probably more common than those that show the classic symptomatology in motor and sensory phenomena. Generally, the clinical manifestation of cerebral thrombosis is of a slow and progressive nature, reaching its height in from twenty-four to thirty-six hours. Its clinical symptomatology will depend, naturally, on the vessel that is the seat of the thrombosis and will generally express itself in compromise of the function of the part of the brain which is deprived of its blood supply. However, I have seen several instances of the spreading type of thrombosis in which the course is relatively slow, taking from three to four days, in which apparently a small branch of a large artery was the initial seat, and from there there was a progressive occlusion of the vessel wall with increasing symptomatology resulting eventually in death (fig. 1).

The differential diagnosis between a purely vascular thrombosis and an infiltrating neoplasm may be quite difficult at times.[8] In general, it may be said that thrombosis of a cerebral artery is more likely to occur in people with cardiovascular and renal lesions or secondary to a systemic infection or wasting disease.[9] It is also rare in the early decades of life.

Of late, I have seen an increasing number of patients with cerebral thrombosis who on further examination proved to have diabetes. The thrombosis improved with the proper treatment of the diabetes. There seems to be some relationship between cerebral thrombosis and overlooked or neglected diabetic conditions.

Cerebral hemorrhage is a broad term applied to several different conditions, among which the following are the most common:

1. Massive cerebral hemorrhage was regarded by Charcot [10] as due to a ruptured miliary aneurysm. Pick [11] was among the first to disprove this theory. According to Globus and Strauss,[12] it is a terminal phase in a sequence of events which have their beginning in a generalized or somewhat localized disease of the cerebral vessels and which result in a closure of one or more such vessels in a given circumscribed area. This leads to the creation of an ischemic zone and consequent focal encephalomalacia. The resultant zone of cerebral softening is a poor support to the vessel wall and is a determining factor in the causation of apoplexy. My own observation has led me to conclude that the most prominent factors in massive cerebral hemorrhage are diseased vessel walls generally due to atheroma, with a sudden elevation of blood pressure due to either emotional or physical causes, such as a fright, emotional tension, straining at stool and coitus. There is no doubt that in the material that I have examined there is evidence of preexisting vascular disease, some thrombosis and cerebral softening; but in most of my cases the outstanding feature that precipitated the massive cerebral hemorrhage was some emotional disturbance or physical effort, which caused a sudden rise in blood pressure. I have seen several cases of massive cerebral hemorrhage in blood dyscrasias, such as thrombocytopenia and aplastic anemia. I have also encountered it in influenza. The favorite site for these massive hemorrhages is either the centrum ovale or the lenticulostriate region.

The onset is sudden, with loss of consciousness flaccid hemiplegia and a high temperature. Consciousness may be regained, and then there is a slow convalescence, the paralysis becoming spastic. The healing process results from the marked glial reaction, particularly on the part of the astrocytic glia.

2. Subarachnoid hemorrhage has received its deserved attention since the publication of Symonds' paper.[13] It is really a symptom complex rather than a disease entity. It is due to the presence of blood on the subarachnoid space. It is caused by trauma, infection, cerebral arteriosclerosis, ruptured cerebral aneurysm, massive cerebral hemorrhage that has invaded the subarachnoid space, ventricular hemorrhage and blood dyscrasias. I have seen it in a 3 year old child. The blood trickles down to the base of the brain, invades the sheaths of the optic nerves and impinges on the cranial nerves. The blood tends to encroach on the

7. Inman, T. G.: Cerebral Thrombosis and Abrupt Slowing of the Cerebral Circulation, J. A. M. A. **75**: 1765 (Dec. 25) 1920.

8. Globus, J. H., and Strauss, Israel: Vascular Lesions and Tumors of the Brain: Difficulties in Differential Diagnosis, Arch. Neurol. & Psychiat. **15**: 568 (May) 1926.

9. Riley, H. A., and Elsberg, C. A.: Differential Diagnosis Between Cerebral Degeneration, Infiltrating Cerebral Neoplasm and Infiltrating Cerebral Neoplasm with Degeneration, Arch. Neurol. & Psychiat. **15**: 48 (Jan.) 1926.

10. Charcot, J. M., and Bauchard, C.: Nouvelles recherches sur la pathogénie de l'hémorragie cérébrale, Arch. d. phys. norm. et path. **1**: 110, 643 and 725, 1868.

11. Pick, L.: Ueber die sogenannten miliären Aneurysmen der Hirngefässe, Berl. klin. Wchnschr. **47**: 325 (Feb. 21); 382 (Feb. 28) 1910.

12. Globus, J. H., and Strauss, Israel: Massive Cerebral Hemorrhage: Its Relation to Preexisting Cerebral Softening, Arch. Neurol. & Psychiat. **18**: 215 (Aug.) 1927.

13. Symonds, C. P.: Spontaneous Subarachnoid Haemorrhage, Quart. J. Med. **18**: 93 (Oct.) 1924.

roots of the cauda equina. The onset is generally sudden, with headache, dizziness or vomiting. There are slight elevation of temperature and a moderate leukocytosis. There is rigidity of the neck with relatively little Kernig reaction. The pupils show a characteristic sign, in that they are continually changing in their size and shape. There may be blurring of the margins of the disks, and retinal hemorrhages may be present. There may be diplopia and facial weakness and deviation of the tongue due to the involvement of the cranial nerves. The deep reflexes are generally depressed, but they may be active and occasionally unequal. Pathologic reflexes, such as a Babinski sign, may rarely be present. A bloody spinal fluid is characteristic of this disease. The bloody spinal fluid is of uniform color when collected in several test tubes; it does not coagulate on standing, and when the fluid is allowed to stand in the test tubes for several hours, the red blood cells settle on the bottom, and the supernatant fluid is of a golden yellow color. The blood in the subarachnoid space acts as a foreign and irritating substance, causing moderate elevation in temperature and a mild leukocytosis. The pain is generally referred to the back of the neck and to the small of the back, owing to the presence of blood in the great cistern and also to the impingement of blood on the nerve roots of the cauda equina. The headache is due to the increased intracranial pressure, to the blocking of the pacchionian bodies by the blood and to irritation of the trigeminal nerve. The prognosis is favorable in the infectious and arteriosclerotic groups, and less so in the ruptured aneurysmal group. In the other types the prognosis is generally fatal. Spinal drainage is the therapy advocated in this condition.

3. Intraventricular hemorrhage[14] is due to rupture of a vessel on or near the ventricular walls (fig. 2). It may be due also to the extension into the ventricle of an adjoining massive cerebral hemorrhage or to the rupture of an aneurysm that has eroded in a ventricular horn. The acute onset of cerebral symptoms in a man with known cerebral arteriosclerosis or a suspected intracranial aneurysm, with the early appearance of coma, persistent bloody spinal fluid, the presence of repeated tonic spasms of the entire somatic musculature or flaccidity of the entire musculature of the body with the absence of classic signs of paralyses and the presence of blurred margins of the disk, should make one suspect intraventricular hemorrhage. The temperature rises rapidly, and the blood pressure also rises. Death occurs within from twenty-four to thirty-six hours. Lannin[15] and Alpers[16] independently reported cases of intraventricular hemorrhage in which the patients recovered. Lannin's case is open to question as to the real site of the hemorrhage, while Alper's case may well be interpreted as one of subarachnoid hemorrhage.

Intraventricular hemorrhage may occur without a bloody spinal fluid. This has been proved in a case which I have observed. The patient died one hour after the acute onset of symptoms. The spinal fluid was not bloody. Postmortem examination disclosed a blood clot that filled the entire ventricular system. The absence of blood in the spinal fluid was explained on the basis of the blood trickling down to the caudal portion of the fourth ventricle, causing edema and blocking of the foramina of Magendie and Luschka, preventing the blood from escaping into the spinal subarachnoid space. The spinal fluid obtained by lumbar puncture was really from the spinal subarachnoid space.

Cerebral embolus (fig. 3) is caused by the occlusion of the lumen of a vessel by a fragment of a diseased cardiac valve, an auricular or ventricular clot or some septic focus. It is, therefore, a complication of mitral or aortic disease, pulmonary abscess or, in cases of patent foramen ovale, thrombosis elsewhere in the body. These emboli are generally microscopic in appearance, and they naturally block small arteries; hence, emboli in large cerebral vessels, such as the anterior, middle and cerebral arteries, are the exception rather than the rule. The most favorite seat for emboli is in the central or ganglionic vessels. The onset is generally sudden, with loss of consciousness and paralysis of a monoplegic or generally of a hemiplegic nature. The initial symptoms are caused not only by the occlusion of the vessel but also by the consequent edema. After a while the edema recedes, and invariably there will be an improvement in the degree of paralysis. Generally the patients complain not only of the paralysis but also of excruciating pain in the paralyzed part. This is due to the fact that the thalamus or its radiations is invariably injured in this disease process. Cerebral embolus occurs in relatively young people in the so-called "cardiac disease" age.

Fig. 2. — Arteriosclerotic intraventricular hemorrhage.

In septic emboli, there may result an inflammation of the vessel wall, terminating in aneurysmal formation and leading to secondary hemorrhage.

Intracranial aneurysms[17] are now more readily recognized than formerly. While the cause is still obscure, generally it is attributed to arteriosclerosis, to septic thrombi and to an innate weakness of the vessel wall at the point of bifurcation. A previous trauma[18] has recently been added to the still mooted question of the etiology. The vast majority of aneurysms are situated in the region of the circle of Willis at the bifurcation of the large vessels, either near the communicating arteries or near the internal carotid. They may occur in relatively young adults. The signs and symptoms of intracranial aneurysms are due to (*a*) the causes of the aneurysm, such as arteriosclerosis, infection and endocarditis, (*b*) to the compromise of adjoining brain tracts and cranial nerves and (*c*) to subarachnoid hemorrhage. It is almost humanly impossible to diagnose an intracranial aneurysm before it ruptures, occurring, generally, as it does, around the circle of Willis and being rather slow in its development. The

14. Sands, I. J., and Lederer, M.: Intraventricular Hemorrhage, J. Nerv. & Ment. Dis. **65**: 360 (April) 1927.
15. Lannin, G. E. J.: Hemorrhage into the Lateral Ventricle: Recovery, Canad. J. Med. & Surg. **38**: 119 (Oct.) 1915.
16. Alpers, B. J.: Ventricular Hemorrhage with Recovery, Arch. Neurol. & Psychiat. **12**: 695 (Dec.) 1924.
17. Sands, I. J.: Aneurysms of the Cerebral Vessels, Arch. Neurol. & Psychiat. **21**: 37 (Jan.) 1929.
18. Wells, H. G.: Intracranial Aneurysm of the Vertebral Artery, Arch. Neurol. & Psychiat. **7**: 311 (March) 1922.

brain readily accommodates itself to the aneurysm without producing signs and symptoms before the aneurysm ruptures. After it ruptures, the diagnosis in many instances is relatively easy. The treatment in this condition is that of subarachnoid hemorrhage, except that one must be careful in withdrawing the spinal fluid. There is a tendency for coagulation to occur at the site of rupture, and that coagulum is supported by the spinal fluid. When the fluid is withdrawn too rapidly or when too much fluid is withdrawn, the support given to the coagulum by the spinal fluid is removed, and bleeding may recur.

The subject of vascular spasm has lately received renewed attention by the emphasis laid on the innervation of the cerebral vessels. It is quite conceivable that the artery may respond to some irritating toxin circulating in the blood. Cerebral vascular spasm may be

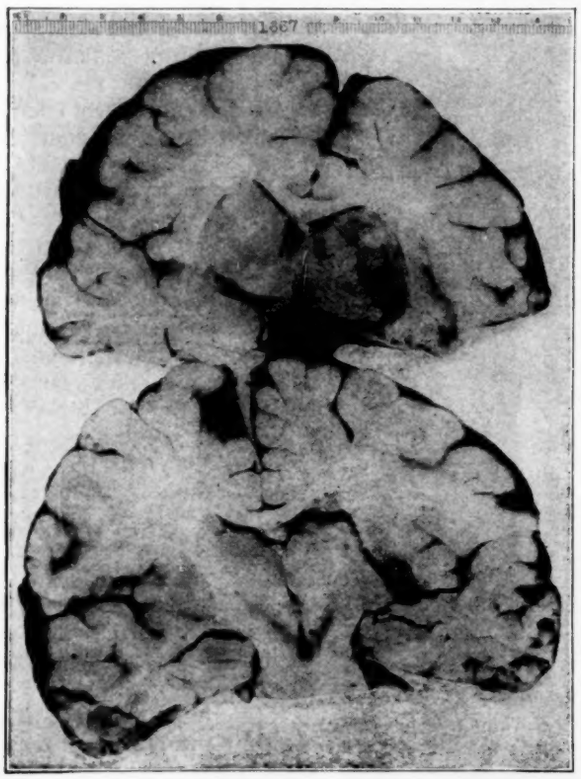

Fig. 3.—Cerebral embolus; favorite anatomic site.

responsible for the various gastro-intestinal and possibly some so-called neurotic symptoms that are present in people suffering from arteriosclerosis. It may cause transitory hemiplegia,[19] hemianopia, aphasia and hallucinations. It is really difficult to evaluate the relationship of symptomatology to basic pathology in cerebral vascular spasm, since such cases do not come to autopsy.

While hemorrhage and thrombosis of the cerebral arteries have received due attention, it is not true of venous hemorrhage and thrombosis. According to Cobb,[20] there are two factors involved in cerebral hemorrhage from venous and capillary sources, namely, a mechanical one, which is venous stasis, and a chemical one, which is asphyxia. As a result of these two factors, there occur free extravasations of blood which coalesce, and frank hemorrhage will result. I have seen it in cases of meningitis in which there are phlebitis and thrombosis and subsequent rupture of the infected vein.[21] It also occurs in carbon monoxide poisoning. Thrombosis of the cerebral veins is present in infections and in chronic wasting diseases.

Thrombosis of the sinuses of the brain is more frequent than is generally supposed. Lateral sinus thrombosis is usually a complication of suppuration of the mastoid and middle ear. It presents the well known clinical picture of chills and high temperature, and is frequently accompanied by a positive blood culture. Occasionally, one may succeed in obtaining additional confirmative signs by spinal manometric tests, when pressure on the jugular vein on the normal side will cause a rise of fluid in the water manometer, but pressure on the jugular vein on the affected side will fail to produce this rise.

Cavernous sinus thrombosis complicates infections of the orbit, nasopharynx and ethmoid and sphenoid sinuses. There are edema of the eyelid, proptosis and possible involvement of the third, fourth and sixth nerves on the same side.

Thrombosis of the superior longitudinal sinus [22] may result as an extension from the lateral sinus thrombus or as an independent condition. It may occur in chronic and wasting diseases. I have seen it as a complication in influenza in infants. It generally occurs in relatively young people. The signs and symptoms will be referable to the involvement of the adjacent brain structure. Therefore, one first meets hypertonicity and paralysis of one or both of the lower extremities, with pyramidal tract signs in these extremities. The upper extremities may at first be free from signs. Later the upper extremities also become involved. Generally, there is headache, with nausea and vomiting and blurring of the margins of the disks.

Chronic subdural hematoma [23] is a condition that may be brought to the attention of the neurologist. Following trauma to the head, which may be relatively insignificant, there occurs, in from a few months to several years, an insidious onset of headache, dizziness, vomiting, drowsiness and coma. There may be papilledema. The exact location of the hematoma may not be ascertained by even a most thorough examination, as even the pyramidal tract signs have often proved misleading. Kaplan [24] has called attention to the dilated and fixed pupil on one side as noteworthy evidence that the hematoma is on the same side. The treatment of this condition is purely surgical.

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ABSTRACT OF DISCUSSION

DR. GEORGE B. HASSIN, Chicago: I merely wish to emphasize that the anatomic factors alone do not always explain well the clinical phenomena. One may have a hemiplegia, hemianopia, or the like, yet the necropsy may show nothing in the nature of hemorrhages, thrombosis or similar conditions. Again, one may find brains in which there is a marked arteriosclerosis or in which there is a syphilitic condition, and yet the clinical phenomena were mild or absent. In other words, there is a lack of correspondence between anatomic changes and clinical phenomena. This caused some pathologists, physiologists and neurologists to resort to additional factors, physiologic, to explain the changes. It is true that in many cases

19. Osler, W.: Transient Attacks of Aphasia with Paralysis in States of High Blood Pressure and Arterio-Sclerosis, Canad. M. A. J. **1**: 919 (Oct.) 1911.

20. Cobb, S., and Hubbard, J. P.: Cerebral Hemorrhage from Venous and Capillary Stasis, Am. J. M. Sc. **178**: 693 (Nov.) 1929.

21. Castleden, L. I. M.: Cerebral Hemorrhage Following Meningitis in a Child, Lancet **1**: 917 (April 25) 1931.

22. Doyle, J. B.: Obstruction of the Longitudinal Sinus, Arch. Neurol. & Psychiat. **18**: 374 (Sept.) 1927.

23. Gradner, W. J.: Traumatic Subdural Hematoma, with Particular Reference to the Latent Interval, Arch. Neurol. & Psychiat. **27**: 847 (April) 1932.

24. Kaplan, A.: Chronic Subdural Hematoma, Brain **54**: 430 (Dec.) 1931.

the phenomena presented by Dr. Sands, such as hemorrhages or arteriosclerosis, may be primarily due not to anatomic but to physiologic factors. These are the result of dysfunction of the vascular nerve apparatus, leading to their malnutrition and phenomena of prestasis and stasis; that is, to disturbances of circulation. Ricker is the able advocate of the teaching that stasis due to nerve involvement of the blood vessels of the brain is the cause of such cerebral phenomena as hemorrhages and softening. A patient, for instance, dies from so-called thrombosis or embolism. If the pathologist is unable to find either, he may interpret the case as dysfunction, as stasis, which, according to Ricker, results in disturbances of circulation and consequent tissue necrosis. I think that in discussions of clinical and pathologic phenomena one must take into consideration both factors, anatomic and physiologic. This will help explain many obscure conditions that cannot be explained on the basis of anatomy or physiology alone.

DR. IRVING J. SANDS, Brooklyn: I am grateful to Dr. Hassin for bringing out a point more clearly than I did in the first few pages of my paper, that it is the physiologic work that is now being carried out in the Harvard University Medical School under the leadership of Dr. Cobb, and the anatomic work by Dr. Hassin and Penfield on nerve endings, and the work of Pfeifer on the arterial circulation, that is really of prime importance in the evaluation of signs and symptoms of these various clinical manifestations. The nerve supply to the arteries plays an important part in the manifestation of clinical signs, and stasis as related to symptomatology is important. They must be evaluated whenever one speaks of the various signs and symptoms. However, one can, I feel, with a little effort, designate the various types of vascular lesions as they occur whether they are massive hemorrhage, subarachnoid hemorrhage, embolus, thrombosis or aneurysm. They all show definite and specific symptomatology.

Clinical Notes, Suggestions and New Instruments

SEVERE POSTPARTUM EPISTAXIS IN A CASE OF NEPHRITIC TOXEMIA

ROBERT H. FAGAN, M.D., LOS ANGELES

The relative infrequency of postpartum epistaxis in nephritic toxemia, together with the radical procedure necessary in this case to save the patient's life, seems to justify its report. According to Solomons and Wilson,[1] a Dutch astrologer in 1660, in referring to the supposed influence of the planet Venus on the human body, stated that there was astrologic evidence of an intimate relationship between the genital organs and the nose. The relationship between the sexual organs and the organs of the mouth and neck have been noted medically since the days of Aristotle, but it was not until 1884 that J. N. Mackenzie[2] called attention to the irritation of the sexual apparatus as an etiologic factor in the production of nasal disease. The engorgement of the cavernous tissue of the nose during pregnancy is now well recognized. Hubbard,[3] in reporting a case of epistaxis during pregnancy which ended fatally, stated that the condition is not so rare and mentioned four other cases which he had observed, in all of which the patients lived.

The patient who presented this unusual symptom was a primipara, aged 29, who was referred to me, in the fourth month of her pregnancy, by Dr. Harry Plath of Oakland. Her history was irrelevant except for the occurrence of quinsy in childhood. Her general physical condition was excellent and the usual laboratory studies gave normal results.

In the sixth month of her pregnancy the first indication of an approaching toxemia was evidenced by an elevation in blood pressure from a previous level of 110/70 to 130/80.

With dietary limitations and more bed rest her condition remained unchanged until the seventh and one-half month of pregnancy, when her first subjective symptom, edema, appeared. Two weeks following this her blood pressure ascended to 160/110 and the urine, previously normal, contained 6 Gm. of albumin per liter.

The patient was immediately hospitalized, Feb. 23, 1932, one month before her expected date of confinement. In spite of bed rest, a milk and water diet, sedatives, and magnesium sulphate intravenously, additional signs and symptoms of a rapidly progressive toxemia occurred for the next twenty-four hours. These were increased edema, lessened urinary output, blurred vision and increased albumin to 12 Gm. per liter. The blood pressure rose to 180/115.

Accordingly, after consultation, on February 24, the day after entry, a low cervical section was done under spinal anesthesia. A boy weighing 6 pounds 12 ounces (3,062 Gm.) was delivered who showed some evidence of toxemia for forty-eight hours, after which he progressed normally.

For the next four days the patient's recovery was very satisfactory. Her highest temperature was 100. Her highest pulse was 108. Blood pressure dropped to 130/90. Albumin dropped from 12 Gm. per liter to 1.5 Gm. and the hemoglobin, which was 71 per cent on entry, was 67 per cent after operation. February 29, five days after delivery, epistaxis first appeared and was controlled by a nasal pack.

March 1 there were two profuse nasal hemorrhages and Dr. Harold Barnard, otolaryngologist, packed both nares.

There were no laboratory evidences of blood dyscrasia. Bleeding and coagulation times were normal. The blood Wassermann reaction was negative. Blood calcium was normal. Although the toxemia had been a rapidly progressive one, the pregnancy was terminated before it had reached the stage of coma or convulsions, and the nonprotein nitrogen of the blood was normal prior to delivery. Examination of the eyegrounds showed no retinal hemorrhages, a condition that would not have been unlikely. Likewise there was no bleeding apparent from the operative site from the gums or other mucous membranes and no abnormal bleeding from the uterus.

March 2, more bleeding occurred. The nose was packed anteriorly and posteriorly and a 500 cc. blood transfusion was given, with temporary hemostasis.

March 3 there was more bleeding and more packing. The patient's condition became critical.

March 4, bleeding occurred even more profusely. The patient's hemoglobin was 48 per cent. A second transfusion was given. The patient was taken to the surgery and Drs. Hasting and Barnard, after exploring the nasal field very carefully, determined that the bleeding was from a vessel high on the left posterior pharyngeal wall which could not be reached satisfactorily by packing. The patient was now bleeding constantly and profusely and they advised that Dr. Sturgeon be called to ligate the left external carotid artery. This was done immediately under gas anesthesia, with the patient in a very serious condition as the result of loss of blood, in spite of the transfusion.

March 5 there was no additional bleeding. A third blood transfusion was given. The patient was in considerable shock from her operative procedure but progressed satisfactorily.

March 7 the nasal packs were removed, with no subsequent bleeding. Condition improved.

March 11 the fourth blood transfusion was given as a convalescent boost. The patient was now well on her way to recovery.

March 16, twenty-one days post partum and twelve days after ligation, the patient left the hospital in good condition with a hemoglobin of 68 per cent and blood pressure 130/90.

For a few days following the arterial ligation the patient complained of left sided headache. Soon this became less apparent and at present, four months after operation, there is no discomfort, except slight, dull left sided headache on fatigue or nervousness.

1136 West Sixth Street.

1. Solomons, B., and Wilson, T. G.: Epistaxis as a Symptom of Toxemia of Pregnancy, Irish J. M. Sc., April, 1927, pp. 154-156.
2. Mackenzie, J. N.: Irritation of the Sexual Apparatus as an Etiological Factor in the Production of Nasal Disease, Am. J. M. Sc. **87**: 360-365 (April) 1884.
3. Hubbard, T.: Epistaxis and Pregnancy: Report of a Fatal Case, M. Rec. **47**: 489-490 (April 20) 1895.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
H. A. CARTER, Secretary.

EVEREADY TABLE MODEL CARBON ARC LAMP, TYPE M-1, ACCEPTABLE

The Eveready Table Model Carbon Arc Lamp (fig. 1) is manufactured by the National Carbon Company, Inc., Cleveland. According to the firm it is designed to produce a light approximating natural sunshine for use in the home or for individual therapeutic light treatment under the direction of a physician. The reader is referred to a previous pronouncement of the Council on Physical Therapy entitled "Acceptance of Sunlamps" (THE JOURNAL, July 2, p. 31).

The lamp is a portable model, mounted on a substantial base which brings the arc to a convenient height from the floor when the lamp is placed on an ordinary stand or table. The beam from the lamp may be tilted through an angle of several degrees above or below horizontal. Model M-1 is designed for operation on direct current or 60 cycle alternating current at standard household voltage. It is adjusted at the factory for operation on 115 volts and will operate satisfactorily without further adjustment on any reasonable variation of voltage above or below that figure. Model M-2 is the same as Model M-1 except that it is adapted to operation on 25 cycle alternating current and should not be used on direct current or 60 cycle alternating current.

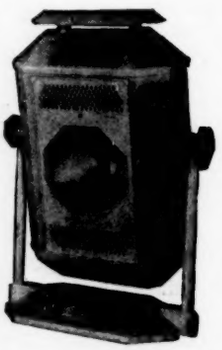


Fig. 1. — Eveready Sunshine Lamp.

Simplicity of operation has been achieved to a remarkable degree. Electrical and mechanical safeguards make this model safe for home use. The lamp is turned on by depressing a lever at the side of the lamp housing. The mechanism is so designed that the carbons cannot be held in permanent contact. The arc is extinguished automatically after a period of operation approximating twelve minutes on a circuit of normal voltage. A door switch breaks both sides of the electrical circuit when the door of the lamp is opened. Lamps are equipped with Eveready Sunshine Carbons, the type found by the United States Bureau of Standards to approximate closely natural sunlight. The filter, of Corex D glass, limits radiation essentially to rays found in sunshine but may be removed when, under the direction of a physician, it is desired to utilize the radiation of shorter wavelengths, especially in greater intensity, such as would be given with certain types of Eveready Therapeutic Carbons. This lamp burns one pair of carbons, the upper carbon being larger in diameter than the lower to equalize the burning rate and maintain the arc position at the focus of the reflector. A chromium plated, mat surface reflector, of hyperbolic form, surrounds the arc. The lamp may be connected to any standard convenience outlet (base plug or wall plug). The average current consumption during the period of operation is approximately 10 amperes. Carbons are not fed together during the burning period and the arc is interrupted when the arc length becomes too great to be longer maintained. Complete technical instructions for operation accompany each lamp. No recommendations for dosage are given other than caution against overexposure until the optimum exposure for the individual user has been determined by experience.

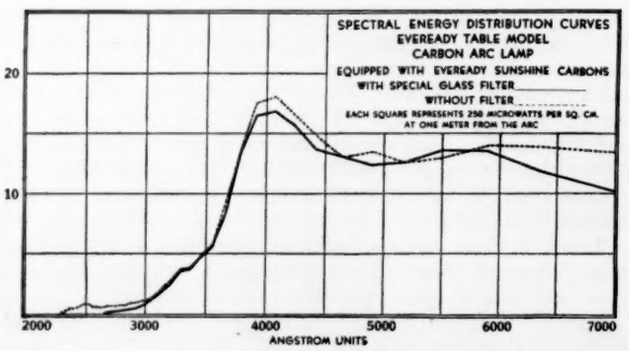


Fig. 2.—Emission characteristics of Eveready Sunshine Carbons.

National Carbon Company, Inc., claims that the Eveready Table Model Carbon Arc Lamp, equipped with Eveready Sunshine Carbons, provides a source of artificial sunlight suitable for individual use in the home. Radiations shorter than 2,900 angstrom units, approximately, are eliminated by means of a (removable) glass filter. The period of operation, without resetting, is short enough to prevent dangerous overexposure when Eveready Sunshine Carbons are used with the glass filter in place.

	Microwatts per Square Centimeter			
	2,400 — 3,100 A. U.		2,900 — 3,100 A. U.	
	@ 1 M	@ 30"	@ 1 M	@ 30"
Sunshine Carbons, Corex D filter	22.	38.	17.	29.
Sunshine Carbons, no filter	55.	95.	23.	40.

The emission characteristics for the Sunshine Carbons are given in figure 2.

The firm claims that at 1 meter, which is just slightly less than 3½ feet, using Sunshine Carbons and the filter in place, the output between the limits of 2,900 and 3,100 angstroms is 17 microwatts per square centimeter. The intensity of average clinical sunlight within this limit is about 14.5 microwatts per square centimeter.

National Carbon Company, Inc., claims that the Eveready Table Model Carbon Arc Lamp with Eveready Sunshine Carbons will provide ample ultraviolet radiation at a distance of 3½ feet with Corex filter in place to prevent rickets and promote and develop sound bones and teeth, and that with the use of various impregnated carbons, it will deliver sufficient ultraviolet, visible and infra-red radiations for individual treatment at home under the direction of a physician practicing artificial light therapy.

The eyes should be protected at all times to avoid conjunctivitis. Users are advised against connecting the lamp to an ordinary lamp socket and also advised to protect the circuit by a fuse of not less than 20 amperes to accommodate the momentary surge in starting.

The Council on Physical Therapy declares the Eveready Table Model Carbon Arc Lamp eligible for inclusion in its list of accepted devices for physical therapy for a period of one year.

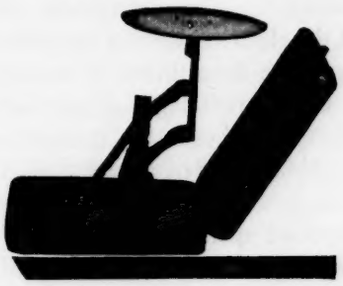
DIET-O-METER ACCEPTABLE

The Diet-O-Meter, manufactured by the Technical Equipment Corporation, 120 Broadway, New York, is a balance (not spring scale) designed for weighing food and calibrated in grams and ounces. For ease of carrying, this scale is enclosed in a nickel-plated metal case 4¾ inches (12 cm.) by 4½ inches (11.25 cm.) in length and breadth, and seven-eighths inch (2.25 cm.) in thickness. This case can be carried in an outside, inside coat or hip trouser pocket. The weight of the case and scale combined is three-fourths pound. The scale is fastened to the case by a hinged joint and for use is lifted up and maintained in a position perpendicular to the bottom surface of the case by a double wire prop, which springs into receiving holes. In the cover of the case, retained by a light spring, is a thin metal nickeled platform 3 inches (7.5 cm.) in diameter, in the center of the bottom of which is a one-fourth inch (1.75 cm.) rod, which is received into a socket at the top of the platform upright of the scale. The height of the erected scale from a table top to the edge of the platform is 5 inches (12.75 cm.).

The mechanism of the scale is simple and consists of a curved metal weight approximately 2¾ inches (7 cm.) long and three-fourths inch (2 cm.) wide, on the bottom of which is a white

celluloid scale calibrated in ounces (black) and grams (red) from 0 to 8 ounces and from 0 to 220 grams. This weight is riveted to an arm, which extends to the main upright of the scale and thence to the platform upright, to both of which it is fastened by a simple but stable joint. To secure stability and trueness of line, the platform upright has at its base a second arm running parallel to the upper portion of the weight arm, which is jointed to it and to the main upright of the scale. To the main upright of the scale is also firmly fixed a reading needle susceptible of slight adjustment by a single screw. Receiving slots and rubber stoppers retain the scale and platform in place in its folded position and make carrying possible without displacement or rattle.

The scale was tested by standard gram weights and seemed to be accurate within all necessary limits. The mechanical



The Diet-O-Meter.

details and the construction of the apparatus seem durable and well made and will probably require little attention other than the occasional oiling of the two scale arm and the two platform arm joints.

Since the weighing of food at each meal is prescribed so commonly as a method of treatment for diabetes and occasionally prescribed for the losing or gaining of weight, the Council on Physical Therapy declares the Diet-O-Meter acceptable for inclusion in the Council's list of accepted devices.

Committee on Foods

GENERAL COMMITTEE DECISIONS

THE COMMITTEE ON FOODS AUTHORIZES THE PUBLICATION OF THE FOLLOWING GENERAL COMMITTEE DECISION ADOPTED FOR ITS OWN GUIDANCE AND FOR THAT OF FOOD MANUFACTURERS AND ADVERTISING AGENCIES ON FOOD ADVERTISING. RAYMOND HERTWIG, Secretary.

STATEMENTS ON CONSTIPATION IN LAY ADVERTISING FOR ROUGHAGE FOODS AND BRAN

Foods with cellulose roughage not lost in digestion increase the bulk of the intestinal contents, favor its onward movement, and tend to prevent stagnation or dietary constipation due solely to insufficient roughage. Regularity of habit and ample roughage are requisites to proper functioning. The relative laxative values of foods not containing noncellulose substances with a specific laxative effect (as prunes or figs) may be roughly estimated from their crude fiber contents.

Constipation may be due to causes other than those of dietary or "roughage" origin. Advertising to the laity shall refer to constipation due to insufficient roughage or food essentials only. This is considered an important requirement in the interest of the health of the people. Cases of constipation not yielding to the regular ingestion of foods providing considerable roughage should be under the care of a competent physician. A permissible claim for a roughage food follows:

> Constipation due to insufficient roughage in the diet should yield to . . . eaten regularly. A competent physician should be consulted for cases not corrected in this simple manner.

Wheat bran has laxative value, owing predominantly to the fiber content and not to phytin or other constituents. Whole grain cereals, and vegetables and fruits in general, are excellent sources of roughage. Bran itself may be irritating to sensitive bowels; the indigestible cellulose of vegetables and fruits is much less irritating.

REPORTS OF THE COMMITTEE

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. RAYMOND HERTWIG, Secretary.

JAEGER'S BUTTER-NUT BREAD NOT ACCEPTABLE

The Oswald Jaeger Baking Company, Milwaukee, submitted to the Committee on Foods a white bread called "Jaeger's Butter-Nut Bread," prepared by the straight dough method from patent flour, water, sweetened condensed skim milk, shortening, salt, sucrose, yeast, malt extract and a yeast food containing calcium sulphate, ammonium chloride, potassium bromate and sodium chloride.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.3
Ash	0.7
Fat	2.1
Protein (N × 6.25)	9.3
Crude fiber	0.3
Total carbohydrates other than crude fiber (by difference)	52.3

Discussion of Name and Advertising.—The name "Butter-Nut Bread" should indicate that the bread contains either "butter and nuts" or "butternuts" and in such quantity as to give the product distinctive physical and nutritional characteristics because of such ingredients and different from the customary white bread. The baking formula contains neither butter, nuts, nor butternuts. The name is considered inappropriate, misinformative and misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name in accordance with the Committee's recommendation. This bread therefore cannot be listed among the Committee's accepted foods.

SIESE'S GENUINE BUTTER-NUT BREAD NOT ACCEPTABLE

The Grays Harbor Baking Company, Aberdeen, Wash., submitted to the Committee on Foods a white bread called "Siese's Genuine Butter-Nut Bread," prepared by the straight dough method from patent flour, water, sucrose, milk, shortening, salt, malt syrup, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.7
Ash	0.9
Fat	1.4
Protein (N × 6.25)	9.8
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	52.0

Discussion of Name and Label.—The name "Butter-Nut Bread" indicates that the bread contains either "butter and nuts" or "butternuts" and in such quantity as to give the product distinctive physical and nutritional characteristics because of such ingredients and different from the customary white bread. The baking formula contains neither butter, nuts nor butternuts. The name is considered inappropriate, misinformative and misleading.

The label statement "Pure milk used" implies that milk is the liquid ingredient of the baking formula used in the preparation of the bread dough and that this is a milk bread conforming to the United States Department of Agriculture definition and standard, which is not true, as only a relatively small proportion of a milk product is used in the formula. Another statement, "Rich as butter" signifies that the bread is equivalent to butter in nutritional and caloric values. Both these label claims are incorrect, inappropriate, misinformative and misleading.

The manufacturer when informed of these opinions has not shown willingness to change the name or eliminate the inappropriate label statements. This bread, therefore, cannot be listed among the Committee's accepted foods.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 5, 1932

QUACKERY AND PHYSICAL THERAPY

A quack is generally defined as a person who makes claims for skill that he does not possess, especially medical skill. The quack in the field of physical therapy, as is pointed out by Dr. Heald,[1] is more likely to make the claims for the machines than for his particular ability in operating the machines. Obviously there are two kinds of quacks in this field: one, the ignoramus who does not know better and who really thinks that he can do medical marvels with ultraviolet, infra-red, diathermy and similar apparatus; and the other, the outright charlatan who knows the virtues that the machines possess for enhancing the power of suggestion and whose main reliance depends on that. Electricity, particularly static, is impressive because of the size of the machines, the crackling of the jumping sparks and similar phenomena. Because devices in the field of physical therapy may be operated even by an ignoramus and because it is the machine rather than the operator that produces the suggestion, numerous persons of unqualified status have entered this field. They include not only physicians who have been sold such devices by the "business-getters" of some manufacturer, but also technicians of one type or another, nurses and the usual run of barbers, blacksmiths and electrical helpers.

Obviously the question of scientific diagnosis previous to medical treatment does not disturb the ignorant practitioner of physical therapy. The physician capable of diagnosing diphtheria would not attempt to treat that condition by the use of lights, either invisible or colored. The charlatan who is unable to diagnose accurately any disease is likely to try his machines on all of them. There is no doubt that most of the apparatus that is manufactured by reputable manufacturers is useful within certain limits. However, exaggerated claims are made for all apparatus—from the completely worthless Abrams device to the most efficient carbon arc or quartz mercury vapor source of ultraviolet.

1. Heald, C. B.: The Menace of Quackery to Physical Medicine, Brit. M. J. **2**: 512 (Sept. 10) 1932.

In his consideration of this subject, Dr. C. B. Heald has set down certain limitations to determine who are qualified to practice physical therapy either as physicians or as lay technicians. He recognizes that no lay technician should use such devices on the sick without medical prescription and without repeated supervision of the patient by the physician. The responsibility for the care of the patient is not that of the technician but that of the doctor whom the patient consults. Heald feels that all physical therapeutic measures in the hospital should be under the control of one department, not with light treatment in the department of dermatology, massage in the department of orthopedic surgery, and the electrical devices for stimulating nerves and muscles in the department of nervous and mental diseases or in the radiologic department. The final suggestion that he makes to the British medical profession is the establishment of a committee for investigating claims for apparatus. This, he feels, would largely stop the flood of quack appliances. The American medical profession has its own Council on Physical Therapy, which already has contributed largely to the control of charlatanism in this field and which, as it gains momentum, will probably do even more effective work in this direction.

BOOTLEG MILK

The conditions created by the economic depression have stimulated numerous efforts on the part of individuals and of families to reduce expenditures in accordance with curtailed incomes. Some of these reductions, involving luxuries, may do more good than harm. Others, such as the limitation of diet or the substitution of inferior qualities of certain foodstuffs, notably milk, may do serious harm.

The importance of milk in the diet, especially for children, has been emphasized repeatedly in these columns. The milk business has become almost as important as any public utility; indeed, there have even been serious proposals that it be so regarded and controlled. The economic factors in milk production and distribution involve the dairy farmer, the milk depot and the distributing operator, who is usually pasteurizer and bottler as well. All have an interest in increasing the consumption of milk. The consumer, however, has the most vital stake. He needs safe milk, and if he does not get it he will not tend to increase his use; the industry will suffer, as well as the children who are deprived of their ration of this important food.

Improvement in the quality of milk, while not an expensive process, costs money. The cheapest milk, obviously, is that which is produced with the least expense and distributed at the smallest cost. In some small communities and even in the neighborhood of larger cities there are farmers with small herds of cows who milk them, bottle the milk (sometimes going through the motions of pasteurizing it), distribute it

and make their own collections. In the old days it was customary to dip the milk out of a large can into a small can left on the doorstep. Such a dairyman has, of course, a sort of personal appeal to his customers, who may resent any attacks on him or attempts to crush him. Nevertheless, he creates a sanitary problem in the milk industry and a public health problem for the community. He does not understand the dangers that lurk in impure milk and would not have the capital to introduce the necessary precautions for their prevention if he did understand them.

Good clean milk must come from healthy cattle; the elimination of tuberculosis alone has required the slaughter of millions of cattle. Embattled farmers, goaded by agitators in some instances, have resisted this progressive measure because they saw only its economic significance or because indemnities paid were considered too low. The introduction of pasteurization has precipitated a battle, which still rages, about the food value of raw versus pasteurized milk. The recent report by Frank, recently discussed in these columns,[1] ought to help settle this question in favor of pasteurization. Economic influences and emotional reactions, on some occasions clearly capitalized for personal profit, have confused the issue of pure milk even in the best of prosperous eras. With the coming of the depression, all subversive forces have been intensified. As a result, illegal milk is being bootlegged in some communities.

A drive on the highways near any large city which has a good milk ordinance well enforced will soon make clear the extent to which the law is being circumvented. Signs on farm properties are numerous, offering milk and cream at about half the prevailing price in the city. Price is the sole consideration on which this bootleg milk is offered and purchased. The product is not supervised as to production or handling; it could not legally be sold in the nearby city at any price. It may be safe, but the chances are that it is not going to be safe all the time. Overwhelming percentages of the outbreaks of communicable disease traced to milk have been charged against raw milk.[2] Most of this bootleg milk is offered raw; when it is pasteurized, the process is not usually safeguarded with timing and temperature charts now required for control of the holding process in regularly inspected pasteurizing plants.

Persons with reduced incomes, when offered what appears to be good milk at a reduced price, are easily persuaded that here is a legitimate saving. Others, still able to pay a fair price for a product of good quality, become afflicted with epidemic depression penury and buy at panic prices to satisfy an impulse toward saving. In either case the result is the same. Many thousands of persons are deliberately going outside the boundaries of their cities, where health department jurisdiction does not extend, and needlessly exposing themselves to milk-borne infections. The practice is not only unhealthful but, in the long run, uneconomical. It is also, quite obviously, a serious handicap to honest milk dealers trying hard to hold their industry up to high standards during difficult times. Physicians, and especially pediatricians, are in a position to call attention to this menace, at least as far as their own patients may be affected. Physicians are also, as organized groups, in a strategic position to protect good milk ordinances and conscientious efforts at enforcement.

1. Frank, L. C.; Clark, F. A.; Haskell, W. H.; Miller, M. M.; Moss, F. J., and Thomas, R. C.: Do Children Who Drink Raw Milk Thrive Better than Children Who Drink Heated Milk? Pub. Health Rep. **47**: 1941 (Sept. 23) 1932. Growth-Promoting Property of Heated and of Raw Milk, editorial, J. A. M. A. **99**: 1512 (Oct. 29) 1932.

2. Crumbine, S. J.: Report on Milk-Borne Epidemic Diseases in the United States and Canada, 1924 to 1931.

ACTIONS OF SAUERKRAUT JUICE

For many years, sauerkraut has been regarded as a laxative with possibly other important physiologic effects. The laxative action has been attributed largely to its lactic acid content, but partly also to the indigestible portion or crude fiber content. More recently, sauerkraut juice has been popularized with emphasis on its vitamin C content. Gehlen,[1] of the Erlangen Pharmacologic Institute, made pharmacodynamic tests with the juice of a commercial product marketed in Germany. The juice had the usual properties—turbidity, characteristic odor, slight greenish color—yielded carbon dioxide and contained yeast and lactic acid bacilli. It was pasteurized and allowed to stand for a few days. The clean, filtered portion, which was used in the tests, had a solid content of 4.9 per cent and ash 1.6 per cent, and the p_H was 4.0 (acid).

Gastric administration of from 10 to 20 cc. of this juice generally caused catharsis in cats but not in rabbits. Lymph sac injections in frogs caused only some fleeting irritation. Hypodermic injections into guinea-pigs and rabbits of 1.8 cc. of the acid or neutralized juice caused increases in body temperature of from 1 to 1.2 degrees C. Applications of the neutralized juice, in final concentrations of from 1 : 10,000 to 1 : 1,000, to active strips of guinea-pig and rat intestine in vitro increased the tone and rhythmic activity, just like parasympathetic nerve stimulation. As the effects were completely relieved and prevented by atropine and the inhibitory actions of epinephrine were still obtained, the juice undoubtedly could directly stimulate the parasympathetic innervation. Further support for this mechanism was found in a slowing and diastolic standstill of the frog heart treated with similar concentrations of the juice, effects which were also relieved and prevented by atropine. The accelerative actions of epinephrine were not affected, nor could epinephrine overcome the cardiac slowing caused by the juice. All the pharmacologic actions of the juice were reversible by washing with appropriate salt solutions.

1. Gehlen, W.: Arch. f. exper. Path. u. Pharmacol. **166**: 703, 1932.

The cardiac actions, Gehlen estimates, corresponded to the effects of 1:20,000 of acetylcholine, whose actions, moreover, the juice faithfully recapitulated. Alkalinity destroyed the actions of the sauerkraut juice; also those of acetylcholine. Although Gehlen made no attempts at chemical isolation of acetylcholine in his sauerkraut juice, he suggests that the juice acted as if it contained a choline ester as an active constituent. The local irritant effects, however, would be attributed to the acidity.

The observations of Gehlen leave the impression that sauerkraut juice may contain potentially active substances, which, if absorbed, might affect physiologic functions. The evidences of physiologic usefulness, however, must be regarded as being far from complete. The interesting possibilities suggested from the results with tissues should be reinforced by evidence indicative of gastro-intestinal absorption of choline-like substances whose ordinary actions, however, are exerted only when injected parenterally. The age-old use of sauerkraut, with impunity, offsets almost at once the possibility of such absorption with definite effects. It may be doubted whether even the laxative action attributed to sauerkraut could be ascribed to some choline-like constituent of the juice. This action is more concerned with the mechanical effects of bulky, indigestible material. At best, only some increased nervous irritability in the intestine might be hoped for from any absorbed choline-like substances; but, again, destruction of such substances is so rapid as to render any action dubious. It is to be hoped that this scientific inquiry will not lead to new unestablished claims for this humble but highly esteemed article in the human dietary.

MASSACHUSETTS AND ARIZONA VOTE ON CHIROPRACTIC ACTS

On election day, November 8, the citizens of Massachusetts and of Arizona will vote on initiative petitions to promote the practice of chiropractic. The Massachusetts Medical Society and the Arizona Medical Association have given ample warning of the menace to public health should the laws that the chiropractors propose be enacted. The principles of ethics emphasize the duty of physicians to warn the public against devices and false pretensions that may cause injury to health and loss of life. On election day, every physician in Massachusetts and in Arizona should discharge that duty to the best of his ability.

Massachusetts has never legalized chiropractic. The chiropractors, therefore, are appealing directly to the people. They modestly define chiropractic as "the science or practice of locating and adjusting by hand the malpositions of the articulations of the human spine." The chiropractors of Arizona defined their calling in the same manner when they procured the enactment of the chiropractic act now in force; but that was in 1921. Now they seek authority to practice what they call "chiropractic," but they define it as "that system of treatment that employs palpation, nerve tracing, analysis, and adjustment of any displaced vertebrae in the spinal column and of any other abnormalities, and which teaches that abnormal health is caused by the interference with nerve energy and that health is restored by the locating and removing of any interference with the transmission of nerve energy." The pending Massachusetts initiative act proposes to forbid any chiropractor from practicing obstetrics, administering drugs or performing surgical operations. The Arizona act of 1921 contained just such limitations, but now the chiropractors of Arizona are asking removal of the limits. Apparently this business is not profitable, if it is limited to manipulations of the spine performed by the hand only. The chiropractors seek, therefore, the right to treat any and every part of the body, for any and every disease and injury to which it is subject, and to use every available method of diagnosis and treatment. They want to be converted into doctors of medicine without being required to possess the qualifications. This is an excellent demonstration of the chiropractic desire to enter medical practice through the basement.

The Massachusetts chiropractors do not ask the right to sign death certificates. They propose that such certificates be signed by the medical examiners of the districts in which the deaths occur. The Arizona chiropractors, however, who are not allowed to sign death certificates, now seek the right to do so. The Arizona chiropractors are seeking even a statutory right to practice chiropractic in every hospital and public institution supported in whole or in part by public funds. As a climax to their demands, they propose that the license fees and annual registration fees of Arizona chiropractors be increased, and that the entire increase be paid to the state chiropractic association to enable it to promote the interests of chiropractic in Arizona. This would make the state officials act as collector and treasurer for the chiropractic organization and force every chiropractor into membership.

The experience of Arizona should warn the voters of Massachusetts that the chiropractic measure before them is the thin edge of a chiropractic wedge. If it is once introduced into the Massachusetts code, the people may look forward to efforts to drive it home so as to expand chiropractic in Massachusetts as it is proposed today to expand it in Arizona.

In Arizona, the danger of the initiative chiropractic act is graver than in Massachusetts, not only because of the greater demands of the chiropractors but also because the Arizona legislature cannot amend or repeal an act adopted by the initiative process, as the Massachusetts legislature can do. In Arizona, only a new initiative act can change an initiative act that has once been adopted. The difficulty of combating the chiropractic menace in Arizona is unusually great, too,

because the voting population is scattered over so large an area. These difficulties, however, make it more important that every Arizona physician devote himself on election day to the defeat of the chiropractic menace.

Current Comment

RADIUM IN THE UNITED STATES

Although radium was isolated more than thirty years ago, not more than 288.4 Gm. had been produced or imported in the United States up to the end of the year 1930. There has been no radium produced in the United States since 1926. The amount imported since then has increased, the imports in 1930 having amounted to 16.86 Gm. A recent report of the U. S. Bureau of Mines estimates that the exports of radium from the United States have not exceeded 20 Gm. and that the amount used in luminous materials since 1916 probably has not exceeded 30 Gm. How much radium, then, is there in the United States in use for medical purposes? There appear to be no exact figures. The Bureau of Mines sent a letter of inquiry to all hospitals listed in the Directory of the American Medical Association, and to date 287 hospitals and clinics have reported that they have a total of 85,800.26 mg. of radium; 414 physicians reported having 33,286.93 mg., and 9 laboratories and companies reported having 5,545.42 mg.; five states reported no radium in hospitals. According to these reports, 4,186.60 mg. of this radium is used on applicators, 42,369.63 mg. in needles, 35,223.79 mg. in tubes and 26,027.65 mg. in solution. Since the number of patients treated annually with radium in the United States is estimated at about 80,000 and the number of deaths from cancer at more than 100,000 annually, it is obvious that a far greater supply of radium is urgently needed. Radium-containing ores have been found in about nine countries. Radium was first produced commercially from uranium residues from the mines of Joachimsthal, Bohemia, where the ores were a government monopoly. At present only the Belgian Congo and Czechoslovakia are producing significant quantities of radium, although there are radium deposits in the United States, Canada, Russia, Portugal, Madagascar, England and Australia. During the time (1913-1926) that American radium factories produced radium salts, they isolated about 203.3 Gm. The Bureau of Mines built and in June, 1914, began the operation of a radium recovering plant at Denver. By the time the work ceased in January, 1917, there had been produced only 8.5 Gm. of radium, but the methods devised reduced the cost of recovering radium to about one third of the current prices at that time. At present the price of radium fluctuates between $60 and $70 per milligram. There should be an explanation as to why most of the countries which have radium deposits are not producing significant quantities of radium salts. Certainly there is a tremendous need for more and less expensive radium, especially for the treatment of cancer.

ACID EXCRETION IN THE SWEAT

Although the occurrence of "acid" in sweat has been conjectured for many years, the actual facts have only lately been accurately ascertained. Recent investigators have found that the p_H of the sweat, as determined by the hydrogen electrode method, varies between 4 and 4.5. In this respect the fluid lost through the cutaneous surfaces resembles that of the other excretory channels, notably the urinary and respiratory paths. Each of these dispose of acid for the body—an important feature in an organism in which an excess of acid product represents the outcome of its normal metabolic changes. One of the acid catabolites in the sweat is lactic acid. This has been reported at various times to be present in measurable quantities after exercise; and a recent estimation [1] ventures to account for 6 or 7 grams eliminated by the cutaneous route after violent exertion. Making use of the so-called radiotherm, Fishberg and Bierman [1] of New York have produced sweating through substantial elevation of temperature without muscular exercise. It is known that several pounds of water can be lost by athletes and workers in an hour. Fishberg and Bierman raised the temperature of their patients to 41 C. (105.8 F.) with resulting loss of body fluid through sweating to an extent almost equal to the entire blood volume. Under such conditions they reported a "base economy factor" of the skin in the ability of this organ to excrete the sweat at a much lower p_H than that of the blood plasma. The excretion of lactic acid and lactates resulted in a sparing of fixed base—a feature of value in maintaining the acid-base equilibrium of the body. Furthermore, the presence of lactic acid and lactates in the sweat acted as a buffer to prevent the lowering of the p_H to below 4, with consequent damage to the skin. Fishberg and Bierman venture to suggest that, although the actual stimulus for the secretion of sweat is in dispute, it is possible that the lactic acid formed by heat and exercise may be the actual substance initiating the process.

Medical Economics

NEW FORMS OF MEDICAL PRACTICE

5. American Medical Insurance Society

The American Medical Insurance Society has its headquarters in Oklahoma City. According to the most recent reports available, it is still in the preliminary stages of organization. This company does not offer a medical service but an insurance policy to individuals covering a limited cash indemnity in case of (1) accidental death and disability, (2) major operations and hospitalization, (3) minor operations in office, (4) home practice calls, and (5) maternity.

According to the published statements of the society:

> This service is available in any Standard Hospital and by any licensed Physician and Surgeon in the United States. This Company has no group of doctors aligned with it for service and has no connection with any hospital. The insured selects his or her own doctor and if hospitalization is necessary they have the right to choice.
>
> The plan and purpose of the American Medical Insurance Society is confined strictly within the bounds of national, recognized, ethical practice. The Society will never recommend any doctor nor any hospital—it recognizes only the profession in its broadest sense, and therein confines itself at all times.

1. Fishberg, E. H., and Bierman, William: Acid-Base Balance in Sweat, J. Biol. Chem. 97: 433 (Aug.) 1932.

The Society in operation will never be dominated by any one medical partisan or group of partisans. The Society will be under control of a Board of Directors consisting of business men following rigidly an unbiased course into the port of absolute neutrality [sic] at all times and in all cases.

The policy holder never, at any time, receives any indemnity or cash benefits. All cash benefits go to the doctor and the hospital for services rendered to the insured and at no time does the insured benefit financially through the misfortune of disease. The contract is an ideal system of forced savings provided for the insured, while in good health, to take care of the financial burden which falls so heavily and often times so suddenly upon the public for the reason they have not provided for just such a contingency.

A sample policy fixes the amount payable for different accidental disabilities on a scale varying from $75 for the loss of an eye to $250 for the loss of life. Liability for hospitalization and surgical fees in case of major surgical operations is limited to $250 in one year, and the company does not become liable until ninety days after the policy is issued. The liability for minor surgical operations exists only after ninety days and is limited to 50 per cent of the actual cost and $30 in any one year. The "Home Service" benefits apply only to a list of twenty-four diseases and apparently do not cover "diseases of the respiratory system" (except pleurisy, pneumonia and tuberculosis) nor of the "digestive system," which, according to recent studies, accounts for about 60 per cent of the morbidity and 30 per cent of the mortality of an average community. For the care of the restricted list of diseases named in the contract, the liability is further limited to a payment of $2 for a maximum of ten calls in any one year, provided the patient is totally disabled and confined to his home during the treatment.

No Negroes are accepted and no person over 60 years of age can receive any of the benefits, which would seem to indicate that the policy automatically terminates at that age.

The sample policy fixes the premium for a family of five at $3 monthly, $17.40 semiannually or $32.40 annually, payable in advance. Policies are issued only after a medical examination by the family physician and presumably only to those in good health.

Among the material circulated by the society is a facsimile of a letter dated April 15, 1932, and signed by Dr. C. E. Kahle, accepting the presidency of the society. Dr. Kahle is not a member of the county medical society. However, the *Oklahoma Insuror* for May, 1932, announces the election of "Col. William Murdoch, prominent Oklahoma insurance man," to the same office. A letter from Mr. Murdoch, dated May 21, 1932, says, "The President of the Company at this time is William Murdoch, who was Secretary of the State Insurance Board of Oklahoma last year."

A display advertisement on the same page of the *Oklahoma Insuror,* containing the announcement of the election of the new president, reads as follows:

AMERICAN MEDICAL INSURANCE SOCIETY
FIRST NATIONAL BUILDING
OKLAHOMA CITY, OKLAHOMA

AN INNOVATION IN THE INSURANCE FIELD

Agents' contracts may be secured. Make your territorial reservations NOW.

WM. MURDOCH, President

JUDGE GEORGE M. NICHOLSON, General Counsel

COMMENT

The merits of the plan are:

1. It does not attempt to set up any special service, to control the choice of physicians or to interfere in any way with the character of the medical service further than to require that it be furnished by some "ethical licensed physician."

2. It operates on a purely cash basis, which should make possible accurate actuarial calculations of risk.

3. It seeks primarily to insure resources for catastrophic illness and accidents and to make only a partial contribution to the expenses of minor injuries and sicknesses.

4. The language of the policies and descriptive literature is somewhat indefinite, but apparently the intention is to pay all moneys direct to hospitals and physicians, thus guaranteeing a portion of their pay.

The principle defects are:

1. The policy, on hasty reading implies a much greater protection than actually exists. If sold by agents, as the advertisement quoted would seem to indicate is the intention, there would be a danger that purchasers would believe they had obtained protection against all, or at least nearly all, of their medical expenses. Just how probable such a deception might be is illustrated by a quotation from the announcement in the *Oklahoma Insuror,* previously mentioned. This says:

The new society which is developed from the group plan aids doctors and hospitals over the country and provides them with a definite guarantee of payment for work done on policyholders in the society. In case of illness on the part of the assured, the society handles costs of medical treatment paying the policyholder nothing but relieving him of all expenses incurred from medical assistance.

But the fact is that the policy as issued is far from providing "doctors and hospitals over the country" with "a definite guarantee of payment for work done on policyholders in the society." Nor is the policyholder relieved "of *all* expenses incurred from medical assistance" (italics ours).

2. Hospitals, physicians and surgeons might also possibly be deceived if they accepted the assurance which is contained in the circular sent to them and which reads:

The above Company is now being organized, under State Supervision for the purpose solely of insuring your accounts—and your patients pay the premiums.

In other words this will be YOUR COMPANY—functioning exclusively to place YOUR BUSINESS on *cash basis* organized for your benefit and protection without cost to you.

A folder greeting the annual convention of the Oklahoma State Medical Association says:

The American is now preparing to offer to the people of the State a limited policy which pays for medical and hospitalization, assuring the doctor and the hospital the payment of their bills. If you will give the Company your co-operation your collection troubles will have ended.

But while their statement assures "the doctor and the hospital the payment of their bills," the policy limits the payment in case of major surgical operation to $250, in minor surgery to "50 per cent of the actual cost" and a maximum of $30, and home service to $2 a visit for ten visits in a year, with the most frequent causes of disease excluded. At the same time the patient may be under the delusion that he is excluded from all responsibility.

3. The premium rate would seem to be high for the amount of protection. At the monthly rate, which would presumably prevail in most cases, the family pays $36 a year, for which, unless there is an accident, or a surgical operation required, the liability is only $20 a year, and this covering only a restricted list of diseases.

4. This entire set-up, including the advertisement for agents, leads to the conclusion that a large percentage of the premiums collected must go for sales and administration expenses and profits.

5. The fact that the payment of the physician's fee depends on the disease from which the patient is suffering makes that fee contingent on the diagnosis, which not only opens the way to disputes as to the accuracy of the diagnosis but introduces a financial influence into the diagnosis itself.

6. Although the society calls itself "a mutual company," the application blank which must be signed by the applicant contains this clause:

I hereby appoint the President and Secretary jointly of the American Medical Insurance Society or their successors in office, by proxy to represent me and cast my vote in any and all matters pertaining to the affairs of the Society, in the event I am not present in person, at any meeting of the members.

This would seem to destroy the mutual character of the company, so far as any control by the insured is concerned. Without a study of the legal aspects of the whole question, it is impossible to determine what obligations might be imposed on the insured by those controlling these proxies.

Association News

PRESIDENT OF WOMAN'S AUXILIARY DIES

Mrs. Walter Jackson Freeman, Philadelphia, president of the Woman's Auxiliary of the American Medical Association, died in Philadelphia, October 27, after an illness of three weeks. Mrs. Freeman was formerly Miss Corinne Keen, daughter of the late Dr. William W. Keen, internationally known surgeon. She was the widow of Dr. Walter Jackson Freeman, at one time professor of laryngology at the Philadelphia Polyclinic School for Graduates, who died in 1920. She was the mother of two physicians, Drs. Walter Freeman, Washington, D. C., and Norman E. Freeman, Boston. She was chosen president-elect of the Woman's Auxiliary at the annual session in Philadelphia, June 10, 1931, and assumed the office in May, 1932.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:40 to 10:45 a. m. (central standard time) over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

November 7. Food and Food Advertising.
November 9. Start Them Right.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:40 to 10:55 over Station WBBM.

The subject for the week is as follows:

November 12. Cultivating the Child's Appetite.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Alumni Day.—Medical school alumni of the University of California will observe Alumni Day, November 18, in the study and discussion of the recent advances in medical practice and in a review of the fundamentals, according to an announcement from the university. Members of the staff of the medical school and of the University Hospital will conduct ward rounds, surgical clinics and demonstrations during the day.

Society News.—Dr. Verne C. Hunt, Los Angeles, addressed the San Diego County Medical Society, October 11, on "Recurrent Peptic Ulcer."——At the meeting of the Contra Costa County Medical Society in Martinez, September 13, Drs. Loris E. Curtis, San Francisco, and Daniel Crosby, Oakland, spoke on "The Physician's Obligation in Caring for Industrial Cases" and "Newer Phases of the Economics of Medical Practice," respectively.——Dr. William P. Lucas, San Francisco, addressed the Fresno County Medical Society in Fresno, September 6, on "Growth and Development Problems in Infants and Children."——A symposium on tuberculosis constituted the program of the Orange County Medical Society, September 6; the speakers were Drs. Francis M. Pottenger, Monrovia, and Carl R. Howson and Merl L. Pindell, Los Angeles.——The Santa Barbara County Medical Society was addressed, September 12, by Drs. William D. Sansum and Harry L. Schurmeier, Santa Barbara, on "Treatment of Underweight, Indigestion and Allergy with Old and New Forms of Digestive Agents" and "Traumatic Arthritis," respectively.——Speakers before the Los Angeles Society of Neurology and Psychiatry, October 26, included Drs. Glenn E. Myers on proposed changes in laws affecting the commitment of the insane, and Edward Huntington Williams, pituitary basophilism with psychosis.——Dr. Hans Lisser spoke before the San Diego Academy of Medicine, November 3-4, on "Present Status of Organotherapy" and "Diagnosis and Treatment of the Clinical Syndromes Produced by Excessive or Deficient Secretion from the Suprarenal Medulla and Cortex."

COLORADO

Hospital News.—St. Mary Hospital, Pueblo, observed its golden jubilee, October 4.

Licenses Revoked.—At a meeting of the Colorado State Board of Medical Examiners, October 4, the licenses of Drs. Paul von Bode, Salt Lake City, Utah, and George W. Thume, La Harpe, Kan., to practice medicine in the state were revoked on account of unprofessional and dishonorable conduct. Dr. von Bode is serving a term of fifteen years in the Utah penitentiary for abortion, and Dr. Thume a term in the federal prison at Leavenworth for violation of the Harrison Narcotic Act.

CONNECTICUT

Biologic Photographic Meeting.—Dr. Milton Winternitz, dean, Yale University School of Medicine, addressed the opening session of the Biological Photographic Association at Yale, October 21. R. P. Loveland, Rochester, spoke on "Motility in Bacteria" and gave the first public showing of a film in which minute bacteria were shown under high magnification. Ralph P. Creer of Yale University was reelected president.

Society News.—The one hundred and fortieth semiannual meeting of the Hartford County Medical Society was held at Bristol, October 25. Dr. Peter A. Nestos discussed a case of spurious meningocele; Dr. Loring T. Swaim, Boston, treatment of chronic arthritis, and Dr. Arthur W. Allen, Boston, management of peripheral vascular disorders.——Dr. Joseph O. Collins, Waterbury, addressed the Waterbury Medical Society, September 8, on cancer.

DISTRICT OF COLUMBIA

Society News.—Dr. Edward L. Keyes, New York, addressed a joint meeting of the Social Hygiene Society of the District of Columbia and the Medical Society of the District of Columbia, October 27, on "Present Status of Venereal Prophylaxis."

Faculty Seminars.—The faculty of George Washington University School of Medicine inaugurated, October 5, a program of monthly seminars and noon luncheons to be held on the first Wednesday of each month throughout the academic year. The speakers at these seminars present original investigations, and time is allowed for a general discussion. Nearly a hundred members of the faculty attended the first seminar, at which Dr. Earl B. McKinley, dean of the medical school, gave a paper on "A Concept of Susceptibility and Resistance to Infectious Diseases on a Physiological Basis." Dr. William A. White will give the address at the second seminar in November.

GEORGIA

Society News.—Dr. Charles W. Roberts, Atlanta, read a paper before the Fulton County Medical Society, October 20, entitled "Yesterday, Today and Tomorrow in Medicine"——Dr. Edgar A. Hines, Sr., Seneca, S. C., secretary of the South Carolina Medical Association, addressed the evening session of the Fifth District Medical Society's meeting, October 12, on medical pioneering in South Carolina.

ILLINOIS

In Memoriam.—The Decatur Medical Society, the American Legion and the Association of Commerce together dedicated a plaque to the memory of Dr. Robert L. Morris, October 23. The tablet, which is placed in the Decatur armory, was unveiled by Mrs. Morris and accepted by Omer E. Davenport. J. J. Maloney, president of the Association of Commerce, eulogized Dr. Morris as a member of that group; Dr. John M. Hayes, colonel of medical reserves, as a member of the Decatur Medical Society, and Nellis Parkinson, past commander, American Legion, as an organizer of Castle Williams Post. James Ringley, Chicago, department commander of the American Legion, also spoke. Dr. Morris died in May, 1929.

Chicago

The "Five-Point Star" Abandoned.—As a result of complaints regarding the improper use of health department badges, the old five-pointed stars worn by employees have been abandoned. A new shield-shaped emblem has been adopted and will be issued only to bona fide employees of the health department. Official notice has been given that old stars will no longer be recognized, the Chicago *Tribune* reports.

Dr. Dick Appointed Chairman of Department.—Dr. George F. Dick has been appointed chairman of the department of medicine in the Division of Biological Sciences, University of Chicago. He has been holding a similar position

at Rush Medical College since July, when he was appointed to succeed Dr. Rollin T. Woodyatt, resigned. Dr. Dick has been clinical professor of medicine at Rush since 1925. The new appointment was made effective, October 1, but Dr. Dick has been granted leave of absence until January 1.

Lay Educational Program.—Medical research and medical progress will be discussed, November 9, in a lay educational program offered by the Chicago Medical Society. The speakers will be Drs. Anton J. Carlson, professor of physiology, Division of Biological Sciences, University of Chicago, on "Thirst and Hunger"; Andrew C. Ivy, professor of physiology and pharmacology, Northwestern University Medical School, "Medical Research and Animal Experimentation"; William A. Evans, health editor, Chicago *Tribune*, "The Human Body and Its Care," and Logan Clendening, professor of clinical medicine, University of Kansas School of Medicine, "Traditions of Your Family Doctor." The public is invited.

Thomas J. Ney Serving Sentence.—Mr. J. E. Edwards, chief inspector of the state department of registration and education, reports that Judge David has denied an appeal in the case of Thomas J. Ney, recently convicted of murder by abortion. Ney is now serving a sentence of fifteen years in the state penitentiary for the crime. Thomas J. Ney was born in 1894, held a diploma from the Chicago Medical School in 1921 and was granted an Illinois license during the notorious regime of W. H. H. Miller in 1922. For some years, Ney was on the so-called medical staff of a quack mail-order epilepsy outfit, the Western Medical Association, now known as the Western Medical Corporation of Chicago. In 1926, Ney's liquor license was revoked. Early in 1932, the state department of registration and education revoked Ney's license, following his conviction.

Capps Prize.—The Joseph A. Capps Prize of the Institute of Medicine of Chicago, consisting of $500 for the most meritorious investigation in medicine or in the specialties of medicine, is again offered. The investigation may also be in the fundamental sciences, provided the work has a definite bearing on some medical problem. Competition is open to graduates of Chicago medical schools who have received the degree of doctor of medicine during the year 1930 or thereafter. The manuscript must be submitted to the secretary of the institute, 122 South Michigan Avenue, not later than December 31. The winner of the prize will be expected to present the results of his investigation before the institute at some meeting in 1933, the time to be designated later. If no paper presented is deemed worthy of the prize, the award may be withheld at the discretion of the board of governors.

INDIANA

University News.—The first general assembly of the faculty of Indiana University School of Medicine was addressed, October 8, by Drs. Maurice Joseph Barry on "Field of Medical Ethics"; George S. Bond, "How to Study Medicine," and Thurman B. Rice, "Health of the Medical Student."

Society News.—Dr. Charles P. Emerson will address the Indianapolis Medical Society, November 8, on "Medicine in the Orient." A symposium on diabetes mellitus will be conducted before the society, November 22, by Drs. Byron K. Rust, John H. Warvel and Herbert F. Thurston. Dr. David L. Smith will discuss "Management of Pregnancy Complicated by Rheumatic Heart Disease" before the society, November 29, and Dr. Henry F. Beckman, "Why Our High Obstetric Mortality?"——Dr. Joseph A. Danna, New Orleans, addressed the Vanderburgh County Medical Society, Evansville, October 20, on principles involved in the pathology and treatment of empyema thoracis.——Dr. Alfred W. Adson, Rochester, Minn., addressed the Lake County Medical Society, October 13, on surgery of the brain.

KANSAS

Society News.—Dr. Clarence S. Capell, Kansas City, Mo., addressed the Golden Belt Medical Society in Salina, October 13, on "Chronic Prostatitis."——"Economics and Ethics of Medicine" was discussed, October 25, by Drs. Clay E. Coburn and Louie F. Barney, Kansas City, before the Wyandotte County Medical Society, Kansas City.

KENTUCKY

Society News.—Drs. Horton R. Casparis, Nashville, and Philip F. Barbour, Louisville, among others, addressed the third district medical society, October 11, on childhood tuberculosis and pneumonia in children, respectively.——Drs. Earl E. Smith, Bardwell, and Elbert W. Jackson, Paducah, were among the speakers at the semiannual meeting of the Southwestern Kentucky Medical Association, October 25, in Fulton, discussing medical and surgical treatment of peptic ulcer, respectively.——Dr. John E. Dawson, Newport, addressed the Campbell-Kenton County Medical Society, Covington, in October, on treatment of acute cholecystitis.——Dr. Emmet F. Horine, Louisville, addressed the Boyle County Medical Society, Danville, October 18, on "Hypertensive Heart Disease."

LOUISIANA

Hospital Centenary.—The original building of Charity Hospital, New Orleans, became a hundred years old, October 8. The area on Tulane Avenue where this one building stood in 1832 is now filled with thirty-one buildings. The history of the hospital is said to date back to 1736, when a sailor left a bequest of $4,000 for medical treatment. With this sum a residence on Rampart Street was converted into a hospital. The building was destroyed in 1779, but in 1784 Don Almonester, a Spanish nobleman, gave $114,000 for the hospital and the Spanish crown invested him with the institution's administration. In 1815 the hospital was rebuilt on another site and again in 1832 on the present site. It is a state institution. Governor O. K. Allen was among the speakers at the ceremony commemorating the anniversary.

MARYLAND

De Lamar Lectures in Hygiene.—Reginald Ruggles Gates, since 1921 professor of botany, King's College, University of London, opened the 1932-1933 series of De Lamar lectures in hygiene at the School of Hygiene and Public Health of Johns Hopkins University, Baltimore, October 19-21, with three lectures on "The Principles of Heredity and Their Application to Human Society."

Public Health Meeting.—The Baltimore City Medical Society will devote its meeting, November 18, to a discussion of public health and preventive medicine. Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, and Dr. William H. Park, director, bureau of laboratories of the New York City Health Department, will be on the program. The Baltimore health department will assist in preparing for the meeting.

Address Preserved.—An address recalling the early days of Johns Hopkins University School of Medicine, given by Dr. William H. Welch, professor emeritus of the history of medicine at the university, will be preserved in a sound film. In the speech Dr. Welch tells of his graduate studies in Europe at a time when many important discoveries were made and of conditions in the university at the time of his appointment in 1884. The address was given on the Field Night of the University Club, October 14.

MASSACHUSETTS

Lectures at Harvard.—Dr. Frederic J. Cotton, Boston, will deliver the George W. Gay lectures on "Medical Ethics," November 8 and 10, at Harvard University Medical School. Dr. Roger I. Lee, Boston, will lecture on "The Care of the Patient," November 15.

Mental Hygiene Meeting.—The Massachusetts Society for Mental Hygiene will hold its annual meeting in Boston, November 15. Guest speakers will include Dr. Walter F. Dearborn, professor of education and director of the psycho-educational clinic, Harvard Graduate School of Education, on "Made That Way," and Dr. Abraham Myerson, professor of neurology, Tufts College Medical School, on "Sanity in Mental Hygiene."

Combined Pediatric Meeting.—A joint meeting of the pediatric section of the New York Academy of Medicine, the Philadelphia Pediatric Society and the New England Pediatric Society was held in Boston, October 15. The program included the following physicians, all of Boston:

Walter B. Cannon, An Interpretation of the Functions of the Sympathetic Nervous System.
George R. Minot, Some Aspects of Secondary Anemia.
Fritz B. Talbot, Basal Metabolism Determinations in Children: Their Clinical Significance.
John L. Morse, What Is Celiac Disease?
Henry A. Christian, What Is Nephrosis?
Kenneth D. Blackfan, Vitamin A Deficiency.
Allan M. Butler, Considerations on the Use of Protein and Salt in the Treatment of Various Types of Bright's Disease.
Lyman G. Richards, Streptococcus Tracheobronchitis.
Louis K. Diamond, Relation of Anemia of the New-Born to Familial Icterus Gravis and Erythroblastosis.
Gerald N. Hoeffel, Demonstration of Patients with Endocrine Dysfunction.

Dr. George H. Bigelow, state health commissioner, addressed the dinner meeting on "Relationship of Public Health Activities to the Practice of Pediatrics."

MICHIGAN

Public Cancer Clinic.—Establishment of Michigan's first public cancer clinic in Detroit was authorized, September 27, by the Public Welfare Commission, according to the Detroit *Times*. Operated jointly by Receiving and Eloise hospitals, it will be free for indigent persons. The clinic was to open within a few days, with Dr. William J. Seymour, associate professor of surgery, Detroit College of Medicine, in charge, it was stated.

Dr. Christian Honored. — The Oakland County Medical Society devoted its meeting, October 20, to a program honoring Dr. Edmund A. Christian, Pontiac, "in recognition of his distinguished service to the medical profession and the state of Michigan." Honorary memberships in the state and county societies were presented to Dr. Christian. The principal address was given by Dr. Thomas J. Heldt, Detroit, on "Newer Methods in the Treatment of Neurosyphilis."

Society News.—A joint meeting of the Wayne County Medical Society and the Henry Ford Hospital, October 25, was devoted to studies on the pituitary and thyroid glands. The speakers were Drs. Joseph A. Johnston, Roy D. McClure, Oliver H. Gaebler, Jean P. Pratt, Frank W. Hartman and Daniel P. Foster.——Howard B. Lewis, Ph.D., of the University of Michigan addressed the Detroit Oto-Laryngological Society, October 19, on "Biochemistry and Its Relation to Present-Day Medical Problems."

NEW JERSEY

Friday Afternoon Lectures. — The Jersey City Medical Center, which is under the city department of public affairs, presented Dr. Cary Eggleston, New York, in a lecture, November 4, on "Diagnosis and Treatment of Coronary Occlusion." This was the first of a series of practical lectures to be held on Friday afternoons until December 23. Physicians scheduled to speak are:

John L. Kantor, New York, The Unstable Colon.
Meredith F. Campbell, New York, Chronic Urinary Infection in Infants and Children.
Lewis A. Conner, New York, Diagnosis and Treatment of Pericarditis.
Paul Reznikoff, New York, The Hemogram in Infections.
Harold M. Hays, New York, Preventing and Alleviating Methods in the Treatment of Deafness.
Richard B. Cattell, Boston, Diagnosis and Management of Carcinoma of the Large Intestine.
Martin E. Rehfuss, Philadelphia, Medical Treatment of Gallbladder.

Society News.—Dr. Wilbur Emory Burnett, Philadelphia, addressed the one hundred and fourteenth annual meeting of the Cumberland County Medical Society at Bridgeton, October 13, on "The Modern Concept of Gallbladder Disease" —— Dr. Harry V. Hubbard, Plainfield, addressed the Union County Medical Society, Elizabeth, October 13, on Vincent's angina. ——Dr. Joseph C. Bloodgood, Baltimore, gave a lecture on cancer at a public meeting in Paterson, October 13, sponsored by the Passaic County Medical Society.——Dr. Robert B. Osgood, Boston, delivered a lecture on arthritis at the Jersey City Medical Center, October 15. —— The Passaic County Tuberculosis and Health Association was recently organized, with Dr. Orville R. Hagen, Preakness, as president.——The New Jersey Tuberculosis League held its annual meeting in Newark, October 14; Dr. Martin H. Collier, Grenloch, was elected president. —— Dr. Lewis K. Ferguson, Philadelphia, among others, addressed the Tri-County Medical Society (Warren, Morris and Sussex counties) in Newton, October 11, on varicose veins and ulcers.——Dr. Bret Ratner, New York, addressed the Bergen County Medical Society, Hackensack, October 11, on allergy in children.

NEW YORK

Tissue Examinations Required.—The state public health council at a meeting, September 23, added to the sanitary code a new regulation requiring that tissue removed at operation or necropsy for examination must be submitted to an approved laboratory, to the division of laboratories and research in Albany or New York, or to the state institute for the study of malignant diseases at Buffalo The new rule, which applies to all examinations made to aid in the diagnosis, prevention or treatment of disease or to determine the cause of death, takes effect, January 1.

Society News.—Drs. Harold E. B. Pardee and Byron P. Stookey, New York, among others, addressed a meeting of the fifth district branch of the Medical Society of the State of New York in Oneida, October 4, on "Correlation of Symptoms and Pathology of Arteriosclerotic Heart Disease" and "Surgical Measures for Relief of Intractable Pain," respectively.——Dr. Harry E. Mock, Chicago, addressed the Onondaga County Medical Society, October 11, on surgery of trauma. —— Drs. Joseph F. McCarthy, New York, and Lorimer J. Austin, Kingston, Ont., among others, addressed the fourth district branch of the Medical Society of the State of New York at Schenectady, October 11-12, on treatment of prostatic obstruction and injuries to the head, respectively.——Dr. Edward K. Cravener, Schenectady, addressed the Medical Society of Montgomery County, Amsterdam, October 12, on arthritis.

Study of Delinquent Boys.—The College of Physicians and Surgeons of Columbia University and the state department of social welfare and children's court judges began a study of the causes of social maladjustment, October 15, at the Warwick State School for Delinquent Boys. It is planned to investigate the physical, mental and social factors that contribute to their delinquency. The medical work is under the supervision of Dr. Willard C. Rappleye, dean of the College of Physicians and Surgeons. Dr. Frederick Tilney, professor of neurology, is chairman of a committee which will establish a clinic for examination of the boys. There will be a resident and a visiting staff, which will include specialists in the various branches of medicine, dentists, surgeons, psychologists, instructors and social workers. Acute medical and surgical emergencies will be cared for at the local hospital or at the Medical Center of Columbia University. Investigations will be under the supervision of a research council. The research will be conducted without preconceptions and wholly detached from any particular school of thought. A $2,000,000 building project is in process at the Warwick school.

New York City

University News.—Dr. Rustin McIntosh, Carpentier professor of diseases of children, Columbia University College of Physicians and Surgeons, delivered an address on "The Accumulation of Clinical Experience" at the opening of the fall session of the college.——Dr. William Henry Welch, Baltimore, gave a lecture at the New York Post-Graduate Medical School of Columbia University, October 26, on "The Significance of Medical History to the Practitioner of Medicine."

Hospital News. — The Psychiatric Clinic of New York Hospital and Cornell University Medical College was opened, October 1, at the new plant at York Avenue and Sixty-Eighth Street. The psychiatric teaching curriculum has been greatly extended with the opening of the new clinic, which has accommodations for eighty-seven adult patients and twenty-three children. The department also conducts Bloomingdale Hospital, White Plains.——Dr. Julius Bauer, Vienna, Austria, delivered a lecture at Mount Sinai Hospital, October 14, on "The Pathogenesis of Endogenous Obesity."

OHIO

Hospital News. — The new Licking County Tuberculosis Hospital near Newark was opened, September 15. Dr. Homer M. Austin is superintendent of the new institution, which was built at a cost of $250,000.

Hanna Lecture.—Dr. Willy Baensch, professor of radiology and director of the X-Ray and Radium Institute, University of Leipzig, delivered the thirty-first Hanna Lecture at the Western Reserve University School of Medicine, Cleveland, October 10, on "Radiological Relief of the Gastric Mucosa."

Health Officers to Meet.—The thirteenth annual conference of health commissioners of Ohio will be held in Columbus, November 16-18. Among the speakers will be Dr. Charles A. Doan, Columbus, on "Immunology in Control of Communicable Diseases"; Thomas J. Le Blanc, Sc.D., Cincinnati, "Instructing Medical Students in Preventive Medicine," and Dr. James A. Doull, Cleveland, "Rôle of the Physician in Public Health Procedures."

PENNSYLVANIA

Society News.—The Pennsylvania Physical Therapy Association held its seventh semiannual meeting at Allentown, October 25-26. Guest speakers were Drs. Harry E. Stewart, New Haven, Conn., on "Radiant Heat and Massage—An Adjunct to General Medicine" and "Diathermy in Pneumonia" and Henry L. Sinskey, Baltimore, on "Treatment of Turbinate Infections with High Frequency Currents."——Dr. Grant E. Ward, Baltimore, addressed the York County Medical Society, York, October 15, on "Newer Methods in Electrosurgery."—— The program of the Allegheny County Medical Society, Pittsburgh, October 18, included addresses by Drs. Ellsmer L. Piper, on nutrition of early infancy; Charles Howard Marcy, management of pulmonary tuberculosis; Joseph S. Baird, management of acute exanthems, and Wilton H. Robinson,

obstetric paralysis.——Dr. Carl E. Ervin, Danville, addressed the Elk County Medical Society, Ridgway, October 11, on treatment of nephritis.

Philadelphia

Blockley Bicentenary Celebration.—Three meetings will be held in Philadelphia shortly to celebrate the two hundredth anniversary of the founding of the Philadelphia Almshouse, later known as "Blockley" and in recent years as the Philadelphia General Hospital. The Philadelphia County Medical Society will observe the anniversary at a meeting, November 30, with addresses by the following physicians:

Robert J. Hunter, Origin of the Philadelphia General Hospital.
Malcolm T. McEachern, Chicago, The Future of the Philadelphia General Hospital.
Alfred Stengel, Importance of the Philadelphia General Hospital in Medical Education.
John Chalmers Da Costa, "Old Blockley."

At the hospital itself a civic meeting will be held, December 6, at which the importance of the hospital to the citizens of Philadelphia will be discussed by Dr. Charles W. Burr and present-day problems of the hospital, by Hon. J. Hampton Moore, mayor of Philadelphia; Roland S. Morris, former United States ambassador to Japan, and Dr. J. Norman Henry, director of the department of health. The section on medical history of the College of Physicians of Philadelphia will present the following physicians on a program, December 12:

Edward B. Krumbhaar, The Study of Pathology at Blockley.
Joseph McFarland, The History of Nursing at Blockley.
William S. Middleton, Madison, Wis., Clinical Teaching at the Philadelphia Almshouse and Hospital.
Daniel J. McCarthy, Fifty Years of Medicine in Blockley.

Within the past five years a $4,000,000 building program has provided a new main hospital and various other buildings, which with renovation of some of the older buildings brought the hospital's capacity to about 2,600.

RHODE ISLAND

Personal.—Dr. John W. Keefe, Providence, received the honorary degree of doctor of laws from Providence College recently.

Society News.—Drs. Frank S. Hale and Joseph Edwards Kerney, Providence, addressed the quarterly meeting of the Rhode Island Medical Society, in September, on "Dystocia Due to the Contraction Ring" and "Transurethral Prostatic Resection," respectively.——Dr. Philip Batchelder addressed the Providence Medical Association, October 3, on "Roentgen-Ray Treatment of Sinusitis."

SOUTH DAKOTA

Society News.—Drs. Frederick W. Minty and Joseph M. Walsh, Rapid City, were speakers at the quarterly meeting of the Black Hills Medical Association at Belle Fourche, August 25, on "Repair of Hernia" and "Bronchial Symptoms of Chronic Sinus Infection," respectively.——Dr. Augustus G. Pohlman of Vermilion, among others, addressed the Aberdeen District Medical Society recently on "Progressive Adaptations of the Circulatory System."——Drs. Ralph K. Miller and Daniel S. Baughman, Madison, among others, addressed the Sioux Falls and Madison District medical societies in a joint meeting, October 11, on "Osteomyelitis of the Tip of the Petrous Portion of the Temporal Bone" and "Congenital Atresia of the Jejunum," respectively.

WASHINGTON

Society News.—Dr. Irvin A. Weichbrodt addressed the King County Medical Society, Seattle, November 7, on "Primitive Medical Methods of Northwest Indians."——Dr. J. Homer Coffen, Portland, Ore., was elected president of the North Pacific Society of Internal Medicine at its fall meeting in Tacoma, October 1.

GENERAL

Fraternity Honors Memory of Founder.—The annual lecture presented before the Alpha Omega Alpha honorary fraternity will henceforth be known as the William W. Root Alpha Omega Alpha Lecture, in honor of the late Dr. Root, of Slaterville, N. Y., founder of the fraternity in 1902 and its secretary-treasurer from that year until his death, April 23. In addition all official stationery and documents of the organization will bear the words, "Founded by William W. Root, 1902." These plans for recognition of the memory of the founder were adopted at a recent meeting of the directors in Chicago. Present officers of the society are Drs. Walter L. Bierring, Des Moines, Iowa, president; Austin A. Hayden, Chicago, vice president, and Josiah J. Moore, Chicago, secretary-treasurer. Mrs. Root is assistant secretary.

Society News.—Dr. John M. Wheeler, New York, was made president-elect of the American Academy of Ophthalmology and Oto-Laryngology at its recent annual meeting in Montreal. Dr. Burt R. Shurly, Detroit, will assume the presidency of the association, January 1, succeeding Dr. Samuel Hanford McKee, Montreal, Que., the present incumbent. The next annual meeting will be held in Boston.——The seventh International Congress of Military Medicine and Pharmacy will be held in Madrid, May 29-June 4, 1933.——Dr. William D. Haggard, Nashville, Tenn., was chosen president-elect of the American College of Surgeons at the annual session in St. Louis, October 21.——Dr. Haven Emerson, New York, was named president-elect of the American Public Health Association at the close of the annual session in Washington, D. C., October 26. Dr. John A. Ferrell, New York, was installed as president. Vice presidents elected are Drs. Arthur T. McCormack, Louisville, Ky., John Sundwall, Ann Arbor, Mich., and William P. Shepard, San Francisco. Indianapolis was chosen as the next meeting place.

Nobel Prize in Medicine Awarded.—Dispatches from Copenhagen announce that the Nobel Prize for medicine and physiology for 1932 was awarded, October 27, to Sir Charles Sherrington of Oxford University, England, and Prof. Edgar Douglas Adrian of Cambridge University, England, for their joint discoveries on the functions of the neuron. Sir Charles has in the past received various other awards for research on the nervous system. He lectured at Yale University in 1904, was Dunham lecturer at Harvard University in 1927, was formerly president of the Royal Society, and is the author of a book entitled "The Integrative Action of the Nervous System." Dr. Adrian, who is Foulerton professor of the Royal Society, delivered the Croonian lecture last year in which he described his research on the mechanism of nerve conduction by means of an improved technic; he adapted a triode amplifier to record the change of a few microvolts due to the independent action of each nerve fiber after being stimulated by electricity. In October, 1931, Dr. Adrian visited the United States to deliver the Eldridge Reeves Johnson Foundation lectures in medical physics at the University of Pennsylvania, and later lectured in Boston, Cleveland and New York. The money value of the Nobel Prize in medicine is the same as that for the four other Nobel prizes for literature, peace, physics and chemistry. It is determined annually by the amount of income of the Nobel Foundation. The Nobel Prizes in 1928 had a value of $42,060 and in 1930 of $46,350.

CORRECTION

Blood in Semen.—In Queries and Minor Notes (THE JOURNAL, October 22, page 1449, line 10) in the reply to M.D., Mississippi, the statement is made that the ejaculatory ducts could be "cauterized." This should have read "catheterized."

Government Services

U. S. Public Health Service

Passed Asst. Surg. Walter L. Barnes, relieved at Manila about October 15 and assigned at the American Consulate, Hongkong, China; Passed Asst. Surg. Anthony P. Rubino, relieved at Hongkong and ordered to Manila; Friench Simpson, promoted and commissioned as medical director in regular corps of public health service, to rank as such from October 9; Grover A. Kempf, promoted and commissioned as senior surgeon in regular corps of public health service, to rank as such from August 16. The following were appointed and commissioned as assistant surgeons in the regular corps: John W. Oliphant, Ralph R. Braund, Vernon A. Gotcher, Seymour D. Vestermark, Hollis U. Maness, Leroy E. Burney, Walter W. Hammond, Jr., Harold L. Lawrence, Victor H. Haas, Clifton K. Himmelsbach and Kenneth E. Gamm; Passed Asst. Surg. Albert T. Morrison, relieved at Belfast, Ireland, and assigned at Dublin, Irish Free State; Surg. Floyd C. Turner, relieved at Buffalo, and assigned at National Institute of Health, Washington, D. C.; Passed Asst. Surg. Franklin J. Halpin, relieved at Southampton, England, and assigned to duty at the American Consulate, London; Passed Asst. Surg. Richard B. Holt, relieved at Stockholm, Sweden, and assigned at the American Consulate, Oslo, Norway; Passed Asst. Surg. Lee C. Watkins, relieved at Detroit, and assigned at the National Institute of Health, Washington, D. C.; Asst. Surg. Roscoe C. Kash, relieved at New Orleans, and assigned at U. S. Quarantine Station, Angel Island, Calif.; Charles R. Mallary, appointed and commissioned as assistant surgeon in the regular corps of the public health service.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 15, 1932.

A Gynecologist's Opinion of American Hospitals

Dr. Bethel Solomons, master of the Rotunda Hospital, Dublin, has returned from a visit to the United States, where he spent about five weeks and delivered the Joseph Price lecture, at the invitation of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, at its meeting at French Lick, Ind. He delivered lectures also at large maternity hospitals in the United States and Canada. He covered many thousands of miles by air and saw virtually everything that was to be seen. His general impression of the United States hospitals is that they have too much money to spend, most of which is devoted to bricks and mortar. In spite of their enormous wealth, Dr. Solomons declares that the rate of mortality in the United States is higher than it is in Ireland. He has returned deeply impressed by his experiences on the other side of the Atlantic, but he holds that although the American hospitals are of the most modern type, equally good work can be done in the older hospitals of these islands, provided the teaching is of the right kind. He was received with great hospitality in all parts of America, and the association of obstetricians elected him an honorary fellow.

Financing of English Hospitals by Sweepstakes

The immense success of the sweepstakes for Irish hospitals, which have now received over $20,000,000, the greater part of which comes from Great Britain, has led prominent persons in this country to undertake a scheme by which their own hospitals can benefit by the gambling spirit of some of its citizens. To get over the difficulty that such sweepstakes are illegal in this country it is proposed to organize one at Monaco, and the director of the Casino of Monte Carlo, M. René Leon, came over to discuss the scheme. It is proposed to run the first on the forthcoming English Grand National race. At first the attitude of the British Hospitals Association was hostile to the scheme, declaring that the proceeds would not compensate them for a consequent loss of voluntary subscriptions, estimated at $40,000,000 per annum. But whether because of the greater difficulty in raising money these hard times or because sweepstake funds have become more fabulous, the association now has passed a resolution that "the association is prepared to receive money for the hospitals from lotteries or sweepstakes but will have nothing to do with their management or promotion." On the other hand, the attitude of one great hospital is less favorable. The governors of Guy's Hospital have passed a resolution that "while sweepstakes are still illegal in England and public inquiry is being made into the question of legalization, it is not desirable that Guy's Hospital should be connected with any sweepstakes, either in the way of publicity, propaganda, or the selling of tickets."

The Smoke Evil

At the conference of the National Smoke Abatement Society the executive council was instructed to consider some method of establishing contact with the teaching profession with a view to instruction of children in the great value of light and the evil influence of smoke. Mr. R. A. Mott of the department of technology at Sheffield University said that the greater part of the smoke pall that overhung the large cities was due to domestic smoke, produced by some 8 million small units, for which 40 million tons of coal was used annually. If coke were used instead, an immense amount of tar, gasoline and illuminating gas would be obtained as by-products. Several cities—Sheffield, Glasgow, Newcastle, Nottingham and others—are now using coke-oven gas, and a gas grid scheme is being worked out in South Yorkshire to collect supplies of gas from coke-oven plants. The use of coke-oven fuel for domestic heating would not only abolish the domestic smoke evil but make this country independent of imported oil supplies.

Rockefeller Endows Clinical Research

The Rockefeller Foundation has given $240,000 to University College Hospital, London, as a fund for the permanent endowment of a post, the holder of which will devote his whole energies to the advancement of clinical research. The object is to bring into existence a body of workers, free from ordinary hospital routine and teaching, who would devote their whole time to the investigation of special clinical problems. Since 1916 the Medical Research Council has financed such a body under the guidance of Sir Thomas Lewis at University College Hospital. In 1930 the hospital formally recognized this group as a definite department of clinical research. This gift will enable the Medical Research Council to make provision for other posts of the same nature and enable young workers to devote their lives to the scientific study of clinical problems, unhindered by the distraction of consulting practice, on the one hand, or the distance from human patients which posts in physiology or pathology enforce, on the other.

PARIS

(From Our Regular Correspondent)

Oct. 5, 1932.

International Congress on Biliary Lithiasis

The Congrès international de la lithiase biliaire, which was held at Vichy, last month, was a success. The attendance was 1,400, including twenty-seven delegates from foreign countries. Mr. Justin Godart, the minister of public health, and most of the honorary presidents attended the opening session: von Bergmann, Berlin; Charles Gordon Heyd, New York; Hijmans van den Bergh, Utrecht; Marañon, Madrid; Sanarelli, Rome; Achard and Hartmann, Paris.

SEQUELS OF CHOLECYSTECTOMY

Mr. John V. Donnet, who presented the first topic, "The Sequels of Cholecystectomy," described the disorders produced by cholecystectomy and concluded that removal of the gallbladder is not justified unless its function is greatly impaired. Wilkie, in another paper, described the conditions that may justify an operation: acute obstruction of the gallbladder, chronic biliary colic, dyspepsia, remote toxic disorders. In his opinion, cholecystectomy entails only slight risks and generally gives excellent results. In 650 cases, he had not observed a failure. Some migraine and poor assimilation of fats may, however, persist. Gosset and Petit-Dutaillis stated that 40 per cent of patients on whom cholecystectomy is performed complain, after the operation, of disturbance of digestion. Serious sequels are observed in only 5 to 10 per cent of the cases; they are attacks of biliary colic, with icterus, to be treated by drainage of the common duct; postoperative biliary fistulas, which are difficult to cure, and stenosing periduodenitis and pericolitis. In a series of 101 cases, Gosset found that the results were highly satisfactory in all forms of calculous cholecystitis and of strawberry gallbladder, with or without calculi. The attacks of pain disappear in 95 per cent of the cases. The results in noncalculous cholecystitis are good when there are pronounced inflammatory lesions of the gallbladder but not so good when, in spite of the clinical signs, only apparent lesions are discovered. Mr. Feissly of Lausanne stated that he had not observed, following cystectomies, any considerable change in the assimilation of fats. Von Bergmann of Berlin thinks that the pains following cholecystectomy, commonly ascribed to adhesions or to nervousness, are due to an altered condition of the pancreas or to inflammatory stenoses of the common duct. Pribram of Berlin ascribes such pain to stagnation of the bile. Jean Villar of Bordeaux presented a series of 312

operations, 260 of which were for biliary lithiasis, with 72 good results and 9 bad results. He now operates only on calculous gallbladders of long standing that have resisted medical treatment and in inflammatory cholecystitis associated with disorders of the intestinal tract. De Martel of Paris admitted that his experience had made him less optimistic about cholecystectomy, even when performed precisely, for the suppression of a useful organ always causes irreparable disturbances. Bérard and Mallet-Guy of Lyons share this opinion and recommend the use of a duodenal tube to discover the nature of the disorders that may follow the operation. Diego de Maxo Queri of Barcelona called attention to the good effects of cholecystectomy in the digestive disturbances often associated with biliary lithiasis. Lambret of Lille reserves the operation for gallstones, as the operation does not improve other cases, which always have complex causes that it is powerless to remedy. Hartmann of Paris warned that an operation that gives such marvelous results in biliary lithiasis should not be underrated, and suggested that the poor results observed in a few cases were due to the fact that the indications were not well established.

TREATMENT OF CHOLECYSTITIS IN BILIARY LITHIASIS

Chiray of Paris and Pavel of Bucharest, in the first paper, considered the indications for medical drainage in biliary lithiasis, which, when properly done, may provoke an attack of colic and evacuation of the calculi. It is sometimes useful after the operation to relieve pain, and, in case of fistula, to aid in conducting the bile toward the natural ducts and to assure the spontaneous closure of the fistula. F. Umber of Berlin considered prophylactic treatment of the liver in biliary lithiasis. The parenchyma of the liver must be protected against dangerous changes brought about by biliary stasis and infection, commonly revealed by icterus and such early clinical signs as a peculiar odor of the breadth. Umber recommended a diet containing a large amount of levulose and dextrose, combined with the use of insulin. Delherm and Dausset of Paris read a paper on physical therapy in gallbladder disease, recommending diathermy but sometimes infra-red rays or roentgen rays, and in some cases massage.

HEPATIC LITHIASIS

Noël Fiessinger of Paris discussed the rôle of the liver in biliary lithiasis, which in many cases is no less important than that of the gallbladder itself. Disturbance of hepatic function is the first phase of the process that leads to lithiasis. Marcel Brulé of Paris read a paper on icterus in stone of the common duct. Hepatomegalia is often present. Use of the duodenal tube, with instillation of magnesium sulphate, is to be recommended, while it enables the examiner to diagnose icterus of cancerous origin. J. Dierick of Louvain presented a technical paper on functional exploration of the liver, in icterus due to lithiasis, by various chemical methods. He concluded that these methods enable one to recognize a disturbance of some functions of the liver but do not reveal with precision which function is defective. The test of induced galactosuria is possibly the simplest and the most conclusive test. It is of diagnostic value in lithiasis to determine the bilirubin content of the blood. René Gilbert of Geneva reviewed the radiologic methods for the exploration of the liver in lithiasis, and in icterus associated with lithiasis, and commended the advances realized through the Graham-Cole method. Hepatography is of too recent date to supply as yet incontestable data. Gatellier of Paris confessed that biliary surgery, during the past twenty years, had made progress only in technic, and that the outcome of the operation depends on the state of the liver.

No one theory was unanimously accepted by the attendants at the congress. Unofficial communications were presented following the regular papers, which were in themselves numerous for a subject so circumscribed. Nearly the whole pathology of the liver was passed in review. Several festive gatherings were held, at one of which the French minister bestowed the Chevalier Cross of the Legion of Honor on two American members of the congress, Heyd and Donnet of New York, the presentation having been made by Professors Hartmann and Achard.

BERLIN

(From Our Regular Correspondent)

Oct. 3, 1932.

Acute Anterior Poliomyelitis in Germany

Poliomyelitis is present in the province of Pomerania, in Brandenburg and in other districts of Germany. In Pomerania, all the higher schools have been closed for the period from September 15 to October 3; also several classes in the Berlin schools have been suspended. Whether the number of cases will exceed the usual number every year is not yet certain. According to reports, thus far the disease is not assuming an epidemic character. Sixty-two cases have been reported this year in Berlin, although fifty of these cases were notified in July, August and September; four deaths have occurred. That there has been a considerable increase in the morbidity may be seen from the adjoining table, which is taken from the *Reichsgesundheitsblatt.*

Morbidity from Poliomyelitis in Germany, Exclusive of the Saar Region

Year	Number of Cases	
1927	2,768	
1928	975	
1929	1,132	
1930	1,337	
1931	1,469	(preliminary report)
1st-26th reporting week	1931 218	
	1932 326	

The mayor of Berlin, acting in accord with the chief of police, ordered that, in view of the considerable number of cases of poliomyelitis in the city, the already announced autumn periods for smallpox vaccination be postponed The time for holding such vaccinations will be announced later. The purpose of this precautionary measure is to prevent avoidable gatherings of young children in various parts of the city.

Effect of the Weather on Blood Pressure

That atmospheric changes exert a marked influence on man is universally recognized; but heretofore there has been a lack of scientific information on the subject. As announced in *Forschungen und Fortschritte,* Dr. Kurt Franke of Halle has made a study during the last four years of the fluctuations in pressure in patients with high blood pressure and in healthy persons under the influence of changes in the weather. His studies revealed that it is not so much the change in air pressure that is important as the shifting of air areas caused by the changing "lows." The invasion of air currents from the polar regions or from the eastern part of the continent generally causes a rise, whereas the arrival of warm Atlantic or subtropical air currents effects a lowering of blood pressure. The component of the atmospheric occurrences that influences the organism appears to be based on electric processes.

A Newly Discovered Galen Manuscript

At a meeting of a class at the Prussian Academy of Sciences in Berlin, a preliminary report was presented by Dr. Richard Walzer of Berlin on a recently discovered manuscript by Galen. The manuscript, which is entitled "On Medical Empiricism," furnishes a complete Arabian translation by Hubais of the work that is known in the Occident only through a few scanty fragments. "On Medical Empiricism" is by no means a polemic against empirical medicine but rather a manual in which the eminent Greco-Roman physician, for didactic reasons, permits

the advocates of unsupported theories to present their views, the mode of presentation being that first the dogmatizing physician attacks the empiricist and then the empiricist is given ample opportunity to defend his position. This manuscript, along with the "Subfiguratio Empirica," will be an important source of information with regard to the empirical medicine of antiquity, which, in the main, has been known only through the polemical attacks of its opponents. The manuscript contains, furthermore, some new material on the history of philosophy; especially on skepticism, and a new fragment of the writings of Democritus and of the Cynic philosopher Diogenes. Likewise the antecedents of Hellenistic empirical medicine will be clarified by Walzer's discovery.

Experimental Roentgen Study of Bone Marrow

Prof. E. Anders, pathologist of the Rudolf Virchow-Krankenhaus in Berlin, has described his extensive research on the spleen, liver and bone marrow by the use of the roentgen ray and thorium dioxide. The experiments were carried out on young rabbits by injecting thorium dioxide into the ear vein. In order to obtain a weak contrast shadow, 0.5 cc. of the 25 per cent solution of thorium dioxide per kilogram of body weight was required in rabbits; to get an excellent shadow picture of the spleen and liver, from 0.75 to 1 cc. per kilogram of body weight was needed. The shadow picture is more likely to be produced, the greater the amount of the contrast agent that is injected. In the spleen, liver and bone marrow, thorium dioxide is stored in the cells of the reticulo-endothelial system in a peculiar crystallized form. Through the destruction of the cells, the thorium salt is liberated and remains in the organs mentioned apparently for an unlimited time as a foreign substance. This "incrustation" of these organs explains the fact that they can be readily exhibited roentgenologically for a long time. As remote injuries, changes of the liver in the nature of a beginning atrophic cirrhosis were observed in the experimental animals. To be sure, the quantity injected exceeded the amount prescribed for diagnostic purposes in man.

Lectures on Charlatanism

The medical faculty of the University of Berlin organized last year a series of lectures on charlatanism. Professor Dr. Diepgen spoke on charlatanism in relation to scientific medicine in past centuries, Dr. Friedheim on German quacks of the present day, Professor Wiethold on the diagnostic methods of quacks, Dr. Kurzrock on the therapeutic methods of quacks, and Professor Müller-Hess on the legal and administrative measures available for combating quackery. In this connection, an exhibit on the problem of charlatanism was opened in the institute for the history of medicine and the natural sciences, Universitätsstrasse 3 b.

Sounds That Pass Between Apartments

One of the most unpleasant features of the modern apartment house is that one can hear noises that occur in neighboring apartments. At the polytechnic in Munich, extensive research has been made at the instance of the Verein Deutscher Ingenieure and of the Notgemeinschaft der Deutschen Wissenschaft to discover what paths sound follows in passing from one apartment to another and what measures must be adopted to eliminate these conditions.

The Verein Deutscher Ingenieure had an experimental structure erected at the polytechnicum, which reproduced reasonably well the given conditions. This structure, or apparatus, consisted of a loud speaker enclosed in a sound-proof cabinet. The cabinet was connected with a tube closed at one end, the wall of which has an opening in the center. Into this opening, disks of varying size and thickness and made from various materials were inserted. In these disks, perforations of diverse size and shape were made. Then the loud speaker was turned on, and a microphone was fastened just outside the inserted disks. Wires from this microphone led to a meter, on which the volume of the sounds issuing from the microphone were recorded.

This research showed that the large circular perforations in the disks did not transmit as large a volume of sound as did the small slits. As a result, directions have been published as to how the passage of sounds from one apartment to another can be lessened at slight expense. The discovery that the narrow slits, contrary to the usual conception, are the principal carriers of sound will doubtless result in some method of preventing the transmission of sounds that are especially annoying.

AUSTRALIA

(From Our Regular Correspondent)

Sept. 10, 1932.

The Aerial Medical Service

The Aerial Medical Service for northern and central Australia has done all that the promoters, the Australian Inland Mission, had expected and is now recognized as an essential service by the people. The wings of *Victory*, the mission's airplane, have made isolated home life possible where it never was before.

This service, opened in May, 1928, won from the outset enthusiastic support. In May, 1929, the superintendent of the Australian Inland Mission reported on the work to the first International Health Aviation Conference, which met in Paris, and there he compared notes with delegates from America, Europe and Asia.

The first difficulty to overcome was that of communication, and the foundations of such service were laid after experiments with a wireless outpost system had been carried out. Established at a cost of £5,000, this organization has its base at Cloncurry in North West Queensland. The outposts cover a radius of 500 miles.

In this system a small portable "pedal" transmitter is the essential unit for all outposts. This set is energized by a generator worked with the operator's feet; hence the name. From the powerful "mother" plant at the base, the staff operator for the Aerial Medical Service transmits messages to twenty outstations, the most distant of which are Hermansburg, Central Australia, and Innamincka, South Australia, both more than 500 miles away. The plants at the outstations are operated by residents (frequently women), who have, in almost every case, been dependent on the traveling radio expert of the Australian Inland Mission for their wireless education. They transmit their inward radiograms in Morse, using an ordinary key; but in the near future they will use an automatic key, designed and manufactured especially for their benefit.

This new boon has a keyboard which is like that of a typewriter. The operator merely presses down the letter or sign desired, and the machine automatically responds by sending perfect Morse signals over the air to the listening operator at Cloncurry. It is estimated that this automatic transmission, which insures both accuracy and speed, will enable the radio base to handle four times as many outstations as at present.

The manufactured cost of the complete transmitter is under £75. The intrinsic upkeep is under £5 per annum but there is also very heavy expense for "service," which has not been charged against the outposts. This service includes, besides the maintenance of the radio base at Cloncurry, provision for the chief radio officer, who accompanies the Australian Inland Mission patrols.

In order to keep the amateur operators of the outposts in good form, the Aerial Medical Service radio service handles all kinds of "everyday" messages as well as calls for medical aid. Last year 3,000 radiograms were handled in this way.

Under a strict time table each outpost is "worked" daily in the ordinary way, but, in addition, emergency calls can be put through any day at 12 noon and at 5 p. m. Additional times are specially arranged, when necessary. Thus it is possible and easy to call for medical aid from places that previously

had been up to 300 miles distant from the nearest telegraph station or telephone.

The actual flying arrangements are carried out by contract with the Queensland and Northern Territory Aerial Services Limited, by the terms of which is maintained, always available at Cloncurry, a D. H. 50 airplane, *Victory*, with a pilot always in charge, fitted with a stretcher, providing accommodation for a physician, a nurse and one patient.

It was provided that the service would be available to all, irrespective of creed or financial position.

From the outset it was understood that, in due course, schemes would be devised whereby local contributions might be stimulated, always without prejudice to the financing of local hospitals and motor ambulances.

The terms of appointment for the physician provided a salary of £1,000 per annum, without board, a life insurance "cover" of £2,000, and traveling expenses and board when away from the base. Private practice was not to be permitted

During the first year of service, the "flying doctor" made fifty flights and covered 20,000 miles without mishap, 255 patients were seen, 42 in consultation with other physicians; 26 centers were visited. The average cost of each flight was nearly £80. A circular sent throughout the flying area by the British Medical Association provided replies in which all physicians within the area commended the scheme and claimed benefit from it. The physician was particularly careful not to trespass on the practice of any established practitioner. He refused to see patients in Cloncurry, except in consultation with the local physician and at his request. He did not visit any outlying centers in which there was a physician, except at the latter's request. Steps are being taken with a view to definite coordination of all inland medical services; and consideration is being given to the establishment of "traveling fellowships" under which flying doctors might enjoy the advantages of postgraduate study on the completion of their service in isolated areas.

The second year's experience showed that 45 per cent of the calls were for urgent medical assistance, usually requiring transport to a hospital; 22 per cent for consultation with outpost physicians or for anesthetics or surgical assistance; 18 per cent were ambulance trips, at the request of the local physicians, to transport patients from outlying hospitals to Cloncurry. The mileage covered was over 20,000.

Now that the service can be regarded as potentially a permanent one, the local people, in spite of the hardships they are undergoing, have taken fresh heart. Improvement in local contributions toward financing the scheme, organization of local committees, steady continuation of calls (many by wireless) from isolated areas (the average is one such flight a week), and numerous calls for advice, given by the physician, by wireless telephony from the base have been noted.

The Australian Inland Mission Board has had the cooperation of the British Medical Association in the establishment and carrying on of the Aerial Medical Service. The region served from the base already established at Cloncurry consists of the gulf district of Queensland and country southward, together with adjacent portions of northern and central Australia, that is, more than 300 miles northeast, 400 miles south, and 550 miles northwest—the whole equal in area to the state of New South Wales. Regions beyond, where the pioneers are still waiting, are the outlying areas of North Australia, Western Australia and Central Australia in a 300 mile radius round Alice Springs.

Hospital Management in New South Wales

An attempt at the solution of the vexed problem of dual control of public hospitals has been made in New South Wales by the appointment in each hospital of a specially trained medical man as medical superintendent and administrator. This régime has been introduced at the Royal Prince Alfred, the Sydney, and the Royal Alexandra hospitals and was done at the suggestion of the chief commissioner of hospitals, Mr. Love.

Dr. Richard Arthur Dies

One of the most prominent health enthusiasts in the history of New South Wales, Dr. Richard Arthur, died, May 21. He was the first medical man to hold office in parliament as minister for health. He took an active part in every social reform in the state, and his life was a model of service and self-sacrifice.

TURKEY

(From Our Regular Correspondent)

Ankara, Sept. 24, 1932.

Six Years of Antimalaria Work

In 1926 a law was passed authorizing the ministry of health to take measures for the eradication of malaria and requiring government agencies to cooperate; it fixed the responsibility for the draining of swamps and required the new graduates of the medical school to take a three months course in antimalaria work. Amendments to this law passed in 1927 provided for state quinine and fixed rewards for officers and voluntary workers in the region where especially good results were procured.

At present, malaria eradication work is carried on in twenty-four of the sixty-three provinces of northern, southern, western and central Anatolia, in twelve units reaching a population of more than two million. Each unit has from four to nine divisions, each under the direction of a specialist. Each unit has a malaria dispensary with from five to twenty beds. At present, 95 physicians and 316 sanitary inspectors are doing antimalaria work in the twelve units; at the headquarters of each unit is a laboratory in the charge of a specialist. The paramount duties of the malaria units are to examine the whole population of their zone twice a year, in April and October; to insure the treatment of all persons found infected, and to combat mosquitoes and their breeding places. Each person coming under treatment receives a card on which is entered the quantity of quinine to be taken. Two quinine treatment books also are used, one remaining with the village alderman and one with the sanitary inspector; in these books the names of persons under treatment are entered and the days are specified on which quinine is to be taken. The medicines used are tablets of quinine hydrochloride, 0.25 Gm., ampules of quinine hydrochloride, 0.50 Gm., chocolate coated tablets of quinine tannate, 0.10 Gm., for children from 3 to 6 years old, and chocolate coated tablets of quinine, 0.05 Gm., for children up to 3 years of age. At the end of the course of treatment, tablets of quinine hydrochloride, 0.10 Gm., arsenic, 0.002 Gm., and ferrous oxalate, 0.05 Gm., are given to anemic and weak persons. In provinces of economic importance, such as Manisa, Adana, Aydin, Smyrna and Samsun, to which thousands of workmen come each year from all parts of the country, itinerant campaigns are conducted to find these workmen.

The law provides for the draining of swamps. All males between the ages of 15 and 65 are obliged to work five days a year on such undertakings. Persons unwilling to work five days pay a tax. The ministry of health, jointly with the ministry of public works, defrays the expense of draining areas of considerable size. Satisfactory results have been procured in a great number of districts. Crude oil is used, especially in the urban and rural communities of the Ankara and Istanbul units, and good results have been procured with paris green. During the winter emphasis is placed on the extermination of anopheles mosquitoes in homes, stable yards and cowsheds, for which pulverized mixtures of formaldehyde and green soap or crude oil are used.

Though malaria eradication work is growing and is carried on in 3,452 communities in 24 provinces, the objective is far off. There are a great number of malarial regions beyond the units.

Before antimalaria work began six years ago, in regions of Adana and Aydin, the physician saw thousands of persons

prostrate in the fields, villages and streets trembling under the spell of fever. Today such sights are a thing of the past.

In 1925 the general spleen index in the Aydin area was 36 per cent, and in 1930 it was 27 per cent. In the Adana area in 1925 it was 24.4 per cent, and in 1930 it was 17.7 per cent. In the Ankara area in 1925 it was 17.3 per cent, and in 1930 it was 14.8 per cent. In the Samsun area in 1925 it was 23 per cent, and in 1930 it was 13.4 per cent. In the Konia area in 1926 it was 24.9 per cent, and in 1930 it was 19.3 per cent. A survey shows that in 1925 the spleen index in all districts was 16 per cent, but in 1930 it was 1.6 per cent.

During the six years, ten ditches of from 2,000 to 47,000 meters in length have been cut. The combined length of ditches cut amounts to 124,777 meters and they drain 283,439 acres of land.

In antimalaria work the government spent 576,313 Turkish pounds ($288,157) during the first year (1925), 547,629 during the second, 510,696 during the third, 380,172 during the fourth, 659,613 during the fifth, and 885,130 during the sixth year of the campaign.

RIO DE JANEIRO

(From Our Regular Correspondent)

Sept. 16, 1932.

The Cerebrospinal Fluid in Different Stages of Syphilis

Drs. O. Lange and H. Sam Mindlin, of the Department of Neurology of the Faculty of Medicine of São Paulo, recently published an article on the changes in the cerebrospinal fluid in the different stages of syphilis. They believe that all cases of syphilis may be considered as potential cases of neurosyphilis. The success of the treatment of neurosyphilis depends on how early in the disease the treatment is given. Although the primary localization of Spirochaeta pallida in the nervous system is a subject still under discussion, it seems that the spirochetes invade simultaneously the meninges and the surrounding nervous tissues. The spinal puncture, made at the atloido-occipital point in syphilitic patients, is a harmless procedure superior to lumbar puncture, because patients do not present symptoms of intolerance to it as they do when lumbar puncture is made. The puncture has been performed frequently during the last few years in Brazil without any fatalities. The condition of the meninges during the early period of neurosyphilis may be ascertained only by examination of the cerebrospinal fluid, which examination should be as complete as possible because the results are frequently partial or even doubtful. The standardization of a technic for the examination of the cerebrospinal fluid would result in a better understanding of the conditions of the soft meninges. The authors performed the puncture on 231 patients with syphilis, in 41.56 per cent of whom the cerebrospinal fluid showed pathologic changes. The cerebrospinal fluid showed slight changes in 40.7 per cent of the patients with primary syphilis who had a positive serum reaction, pathologic changes in 39.2 per cent of the patients in the secondary stage of syphilis, and still more serious changes in 51.3 per cent of the patients with tertiary syphilis. Pathologic changes in the cerebrospinal fluid in latent syphilis were observed in 48.6 per cent of their cases. This fact seems to conflict with the general opinion that syphilis is a benign condition during the latent period.

The administration of intensive antisyphilitic treatment is not an absolute preventive of neurosyphilis, as was shown by the marked pathologic changes in the cerebrospinal fluid of 33⅓ per cent of syphilitic patients who received it. Examination of the cerebrospinal fluid should be a routine measure in all patients with syphilis. Patients in the first or secondary stages of syphilis should be given an intensive treatment continued for about a year or a year and a half and then the examination of the cerebrospinal fluid (with the technic mentioned) performed. If positive results are obtained from the examination, the treatment should be continued for another year, at the end of which period the examination of the cerebrospinal fluid should be repeated. When negative results are obtained, the patient will be given treatment to consolidate the cure. If the cerebrospinal fluid still shows pathologic changes, a special treatment should be given. In cases of latent or tertiary syphilis, the cerebrospinal fluid will be examined before the patient has been given any treatment. If changes of the cerebrospinal fluid are observed at the initial examination, the patient will receive intensive treatment, which will not be discontinued until further examination of the cerebrospinal fluid gives negative results. The examination will be made at certain intervals during the treatment. If favorable modifications of the cerebrospinal fluid are not obtained by some treatments, the patients should be given a specialized treatment. When the antisyphilitic treatment is going to be discontinued because favorable modifications of the cerebrospinal fluid have been obtained by the treatment, the cerebrospinal fluid should be examined for the last time in order to prevent late neurorecurrences. The cerebrospinal fluid should be examined whenever there is a resistant Wassermann reaction. In the larger number of these cases the cerebrospinal fluid has undergone such pathologic changes that most probably the changes are the main cause of the constant positive serum reactions. The negative results in the examination of the blood do not furnish any information on the conditions of the cerebrospinal fluid. Residual positive conditions should not be neglected; on the contrary, the patient should be treated in such a way as to avoid a further evolution of the syphilitic virus, which in time may cause aggravation of the general condition, with reactions that are more difficult to control.

Experimental Catatonia Caused by Tonka Bean

Drs. F. A. de Moura Campos and J. Ribeiro do Valle of the Faculty of Medicine of São Paulo recently published an article on the results of inoculating frogs, toads and birds with extracts of the macerated seeds of tonka bean (Dipteryx odorata). The catatonic manifestations were almost complete in pigeons. The motor functions were lost. The pigeons showed catalepsy and disturbances of the sympathetic nervous system. Frequently the animals vomited and showed disturbances of coordination, and of the equilibrium with ataxia. Sometimes they had clonic movements of the legs. Frogs and toads showed catalepsy to a certain degree. In a certain period of catalepsy when the animals' skin was touched, the records showed the indications of clonic movements.

Anemia in Ancylostomiasis

Dr. W. Oswaldo Cruz of the Instituto Oswaldo Cruz, from studies on the pathogenesis of the anemia of ancylostomiasis, concludes that in the cases of ancylostomiasis insufficiently treated by iron compounds the bone marrow presents a hyperplastic aspect with a parenchyma rich in cells. Nevertheless, in certain stages of evolution of the disease, the production of cells of the hemoglobinic series stops, while there exists a preponderance of erythrocytes with pyknotic nuclei. In cases of malaria there is a preponderance of erythroblasts with nuclei originating in the bone marrow. The erythroblasts evolve to the stage of erythrocytes, thus causing an intense regeneration of the blood which is never observed in ancylostomiasis. The treatment of ancylostomiasis with vermifuges does not modify the blood picture as long as the diet is poor in iron. This fact indicates that the treatment with vermifuges (when given alone without taking into consideration a proper diet) is of no therapeutic value. On the contrary, the treatment with reduced iron in large doses, even if it is given without the combination of vermifugal agents, causes a rapid and complete regeneration of the blood and the symptomatic cure of the disease. These facts prove, in the author's opinion, that anemia of ancylostomiasis is caused by alterations of the organic iron metabolism.

Marriages

FRANCIS MICHAEL FRECHETTE, Janesville, Wis., to Miss Gladys Farness of De Forest, Ill., in Chicago, August 9.

WILLIAM B. EGAN, Oak Park, Ill., to Miss Dorothy Elizabeth Hutton of East Dubuque, at Chicago, in August.

WILLIAM JOHN THUDIUM, Philadelphia, to Mrs. Elizabeth Rommel Markell of Wilmington, Del., October 15.

URBAN F. D. STORK, Evansville, Ind., to Miss Mary Wanda Allison of Nashville, at Indianapolis, August 14.

JAMES A. BRUSSEL, Brentwood, N. Y., to Miss Audrey Mildred Ankin of Brooklyn, recently.

GEORGE W. HEINITSH to Miss Nellie Hamilton Graves, both of Chapel Hill, N. C., July 29.

HUBERT E. SHAFER, Middlefield, Ohio, to Miss Florence Whitacre of Cleveland, August 29.

ALFRED G. RICE, East Moline, Ill., to Miss Mary Ellen Rush of St. Louis, August 13.

ARTHUR MERL CULLER to Miss Louise Swartsel, both of Dayton, Ohio, August 5.

AUGUST M. FRENCH to Miss Elizabeth Fleck, both of Louisville, Ky., July 27.

Deaths

William Lambert Richardson, Boston; Harvard University Medical School, Boston, 1867; member of the Massachusetts Medical Society; instructor of obstetrics, 1871-1872, 1874-1882, assistant professor, 1882-1886, professor, 1886-1907, professor emeritus in 1907, dean, 1893-1907, overseer, 1909-1915, at his alma mater; Civil War veteran; for many years president of the Lying-In Hospital; aged 90; died, October 20, of cerebral thrombosis and arteriosclerotic heart disease.

Daniel Le Roy Burgeson, Los Angeles; College of Medical Evangelists, 1918; member of the California Medical Association; formerly assistant professor of medicine at his alma mater; fellow of the American College of Surgeons; on the staffs of the Methodist Hospital and the California Hospital; aged 39; was killed, September 11, when the ambulance in which he was riding collided with another.

Stephen Gano West, Chicago; Rush Medical College, Chicago, 1890; member of the Illinois State Medical Society; formerly adjunct professor of gynecology, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois; on the staff of the West Side Hospital; aged 67; died, October 18, of a self-inflicted bullet wound.

Clinton DeWitt Collins ⊕ Chicago; Hahnemann Medical College and Hospital, Chicago, 1889; Rush Medical College, Chicago, 1890; formerly professor of skin and venereal diseases at the Hahnemann Medical College and Hospital; member of the Radiological Society of North America; aged 66; died, October 15, of cirrhosis of the liver and heart disease.

Harry Theodore Hillstrom ⊕ Nashville, Tenn.; University of Minnesota Medical School, Minneapolis, 1927; assistant professor of surgery in charge of radiology, Vanderbilt University School of Medicine; on the staff of the Vanderbilt University Hospital; aged 29; died, October 3, of injuries received in an automobile accident.

Orville Rogers Chadwell ⊕ Boston; Boston University School of Medicine, 1903; professor of pediatrics at his alma mater; member of the New England Pediatric Society; on the staffs of the Massachusetts Memorial Hospitals; aged 55; died, September 30, at his home in Jamaica Plain, of acute morphine poisoning.

Burt Smith Stevens ⊕ San Francisco; Northwestern University School of Medicine, Chicago, 1908; fellow of the American College of Surgeons; member of the state board of medical examiners; served during the World War; aged 58; on the staff of St. Francis Hospital, where he died, October 7.

George W. Stewart ⊕ Saginaw, Mich.; University of Michigan Medical School, Ann Arbor, 1892; past president of the Saginaw County Medical Society; formerly mayor of Saginaw; for many years on the staff of St. Mary's Hospital; aged 67; died, September 25.

⊕ Indicates "Fellow" of the American Medical Association.

Albert G. Watkins, Newark Valley, N. Y.; Syracuse University College of Medicine, 1898; for many years health officer; member of the consulting staff of the Tioga County Hospital, Waverly; aged 61; died, July 18, of chronic interstitial nephritis and cerebral thrombosis.

Matthew U. Chesire ⊕ Marshalltown, Iowa; Rush Medical College, Chicago, 1897; past president of the Marshall County Medical Society; city health officer; aged 62; on the staff of St. Thomas Mercy Hospital, where he died, September 29, of heart disease.

Charles Eugene Williams ⊕ Ashland, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1905; president of the Boyd County Medical Society; aged 58; formerly on the staff of the King's Daughters' Hospital, where he died, October 5.

Rollin Embury Woodworth, Sanator, S. D.; Medical Department of the University of the City of New York, 1889; aged 66; director and medical superintendent of the South Dakota State Tuberculosis Sanatorium, where he died, October 10.

Jacob Mishkin, Los Angeles; Medico-Chirurgical College of Philadelphia, 1895; member of the California Medical Association; aged 56; died, September 26, in the California Lutheran Hospital, of self-inflicted incised wounds of the arms and wrists.

Edmund Morse Pond, Coral Gables, Fla.; Bellevue Hospital Medical College, New York, 1889; past president of the Vermont State Medical Society and the Rutland County Medical and Surgical Society; aged 67; died, October 2, of thrombosis.

John Matthews Francis English, Providence, R. I.; University of Maryland School of Medicine, Baltimore, 1914; aged 43; died, September 20, in the Veterans' Administration Hospital, Newington, Conn., of chronic pulmonary tuberculosis.

Ralph Edward Smith, Jacksonville, Fla.; Atlanta Medical College, 1891; member of the Florida Medical Association; aged 64; died, September 26, in St. Luke's Hospital, of acute cardiac decompensation, diabetes mellitus and pneumonia.

Samuel Dickinson Otis ⊕ Meriden, Conn.; Medical Department of the University of the City of New York, 1877; past president of the New Haven County Medical Society; aged 74; died, September 18, of cerebral hemorrhage.

John Edward Wilkinson, Prattville, Ala.; Medical Department of the University of Louisiana, New Orleans, 1869; member of the Medical Association of the State of Alabama; aged 85; died, September 28, of chronic nephritis.

George Alexander Schneider ⊕ Chicago; Dearborn Medical College, Chicago, 1906; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; aged 60; died, October 17, of heart disease.

Thomas A. Stevens, Caney, Kan.; Kansas City Medical College, 1892; member of the Kansas Medical Society; formerly mayor of Caney, member of the board of education and postmaster; aged 76; died, October 2, of leukemia.

John Edward Marshall ⊕ Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1915; on the staff of the Lebanon Sanatorium; aged 41; died, September 22, in the Reading (Pa.) Hospital, of myocarditis.

Isaac Parsons Fiske, Coventry, Conn.; Medical Department of the University of the City of New York, 1875; member of the Connecticut State Medical Society; aged 80; died, September 28, of cerebral hemorrhage.

Curl Anderson Young, Memphis, Tenn.; Howard University School of Medicine, Washington, D. C., 1911; aged 47; on the staff of the Collins Chapel Hospital, where he died, August 25, of ruptured appendix.

Arthur Levens Fuller, Shiner, Texas; University of London Faculty of Medicine, London, England, 1889; member of the State Medical Association of Texas; aged 66; died, September 25, of angina pectoris.

John Crocker Fisher ⊕ Claremont, Calif.; Long Island College Hospital, Brooklyn, 1876; member of the Medical Society of the State of New York; aged 82; died, August 15, in Alhambra, of arteriosclerosis.

Howard Lee Sargent, Northfield, Minn.; University of Minnesota Medical School, Minneapolis, 1917; served during the World War; aged 44; died, September 13, in the Northfield Hospital, of encephalitis.

Owen Bayard Van Epp, Cashiers, N. C.; Cleveland Homeopathic Medical College, 1900; member of the Medical Society of the State of North Carolina; aged 57; died, October 6, of gastric carcinoma.

Walter Stokes Sharpe, Valley Junction, Iowa; Northwestern University Medical School, Chicago, 1906; veteran of the Spanish-American and World War; aged 55; died, October 3, of heart disease.

Irwin N. Johnson, Pen Argyl, Pa.; Medical Department of the University of the City of New York, 1887; formerly member of the state legislature; aged 70; died, September 19, of chronic myocarditis.

Jacob E. Wright, Cambridge City, Ind.; Chicago Homeopathic Medical College, 1884; Hahnemann Medical College and Hospital, Chicago, 1905; aged 70; died, October 4, of cardiovascular renal disease.

Miles Pinkney Stephens, Attalla, Ala.; Chattanooga (Tenn.) Medical College, 1894; on the staff of the Forrest General Hospital, Gadsden; aged 64; died, September 16, of cerebral hemorrhage.

Egbert Wilson Sproule ⊕ Humboldt, Iowa; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1905; served during the World War; aged 55; died, September 29, of coronary embolism.

Eugene Klein, New York; Columbia University College of Physicians and Surgeons, New York, 1915; aged 39; on the staff of the Mount Sinai Hospital, where he died, October 2, of pneumonia.

Carl Baker, Herrin, Ill.; Northwestern University School of Medicine, Chicago, 1906; member of the Illinois State Medical Society; aged 55; died, September 17, of injuries received in an airplane crash.

Junius Francis Lynch, Norfolk, Va.; Medical College of Virginia, Richmond, 1888; served during the World War; for many years on the staff of St. Vincent's Hospital; aged 66; died, September 16.

Daniel H. Nothdurft ⊕ Otis, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1902; past president of the Rush-Ness County Medical Society; aged 54; died, August 27, of pancreatic cyst.

Gilbert A. Buchanan, Prescott, Ark.; University of Arkansas School of Medicine, Little Rock, 1911; member of the Arkansas Medical Society; aged 48; died, September 12, of acute cholangeitis.

Morris H. Evans, Emerson, Neb.; Columbus (Ohio) Medical College, 1884; member of the Nebraska State Medical Association; aged 75; died, September 19, in a hospital at Sioux City, Iowa.

Thomas Mathias Joyce, Vacaville, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; aged 51; died, September 11, of heart disease.

Joseph S. Platt, Port Huron, Mich.; Medical Department of the University of the City of New York, 1880; member of the Michigan State Medical Society; aged 75; died, October 7, of myocarditis.

George Haughton Fish, Saratoga Springs, N. Y.; Albany (N. Y.) Medical College, 1899; formerly county coroner; on the staff of the Saratoga Hospital; aged 55; died, October 10, of pneumonia.

Henry H. Snow, Norwood, Ohio; Pulte Medical College, Cincinnati, 1891; formerly on the staff of the Bethesda Hospital, Cincinnati; aged 72; died, October 9, of cerebral hemorrhage.

Charles H. Voorhies, Lexington, Ky.; Louisville Medical College, 1897; for many years health officer of Lexington; aged 59; died, October 7, in St. Joseph's Hospital, of carcinoma of the lung.

Charles G. Purdy, Brooklyn; Medical Department of the University of the City of New York, 1888; aged 82; died, September 20, of injuries received when he was struck by an automobile.

Newton Booth Waller ⊕ New York; Medical Department of the University of California, 1896; aged 60; died, October 12, of illuminating gas poisoning and self-inflicted incised wounds.

John Alvin Bolton, Cleveland; Medical Department of Western Reserve University, Cleveland, 1910; aged 43; died, September 19, in the Cleveland Clinic Hospital, of brain tumor.

Henry Cyril Knapp, Armstrong, Ind.; Marion-Sims-Beaumont Medical College, St. Louis, 1902; aged 56; died, September 8, of carcinoma of the right lung and the liver.

John Fletcher South, Loretto, Ky.; University of Louisville School of Medicine, 1911; member of the Kentucky State Medical Association; aged 82; died, October 7, of senility.

Chester M. Ferrin, Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1865; Civil War veteran; aged 95; died, September 28, as the result of a fall.

Ralph Lee Williams, Columbus, Ga.; Atlanta College of Physicians and Surgeons, 1912; health officer of Columbus; aged 45; died, August 10, in the Columbus City Hospital.

Paul Martin Kellogg, Rogers, N. D.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; aged 45; died, August 11, of a self-inflicted bullet wound.

Thomas P. Benson, Baltimore; University of Maryland School of Medicine, Baltimore, 1898; aged 59; died, September 11, of hypernephroma with metastasis to the bones.

Franklin Henry Merriam, Braintree, Mass.; Harvard University Medical School, Boston, 1899; member of the Massachusetts Medical Society; aged 62; died, August 9.

Milton H. Weaver, Richlandtown, Pa.; Bellevue Hospital Medical College, New York, 1877; aged 77; died, September 29, of influenza and chronic myocarditis.

George M. O'Leary, Huntington, Ind.; Hahnemann Medical College and Hospital, Chicago, 1898; formerly county health officer; aged 66; died suddenly, August 15.

James Y. Kline, Hopeland, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1874; aged 81; died, September 16, of cerebral hemorrhage.

Franklin Thomas Duncan, San Francisco; College of Physicians and Surgeons of San Francisco, 1897; aged 57; died, July 31, of cerebral hemorrhage.

Thomas Benjamin Whatley, Jenkinsville, S. C.; University of Georgia Medical Department, Augusta, 1887; aged 75; died, September 14, of heart disease.

Max Girsdansky, New York; Medical Department of the University of the City of New York, 1894; aged 66; died, October 11, of cerebral hemorrhage.

William Isaac Hoag ⊕ Indianapolis; College of Physicians and Surgeons in the City of New York, 1884; aged 73; died, October 9, of heart disease.

Edward John Bowes, Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1890; aged 73; died, July 13, of arteriosclerosis.

Jordan Bourne Hankal, Indianapolis; Meharry Medical College, Nashville, Tenn., 1912; aged 45; died, October 3, in the City Hospital, of pneumonia.

George S. Pettit, Oklahoma City, Okla.; Hygeia Medical College, Cincinnati, 1898; aged 60; died, August 9, of carcinoma of the pancreas and liver.

Robert Moore Wells ⊕ Orleans, Vt.; University of Vermont College of Medicine, Burlington, 1902; aged 54; died, July 11, of angina pectoris.

Robert Augustus Gordon ⊕ Lorena, Texas; Memphis (Tenn.) Hospital Medical College, 1902; aged 59; died, August 13, of chronic myocarditis.

J. R. M. Carter, Carrollton, Ga.; Atlanta Medical College, 1883; aged 73; died, September 14, of uremia, chronic nephritis and cerebral hemorrhage.

John Spencer Cross, Youngstown, Ohio; Cleveland Homeopathic Medical College, 1898; aged 59; died suddenly, October 5, of cerebral hemorrhage.

John Benjamin Buehler, New York; St. Louis College of Physicians and Surgeons, 1920; aged 52; died, June 13, of bronchopneumonia.

G. F. Brock, Brock, N. C. (licensed, North Carolina, 1885); formerly member of the state legislature; aged 86; died, August 6.

Julius Murray Wilson, Marissa, Ill.; Medical College of Ohio, Cincinnati, 1873; aged 85; died, August 11, in St. Louis, of myocarditis.

Charles Mills Stewart, Hume, N. Y.; University of Buffalo School of Medicine, 1871; aged 82; died, September 11, of pneumonia.

Armin Rappaport, New York; Baltimore University School of Medicine, 1900; aged 54; died, June 17, of coronary thrombosis.

Louis Henry Staples, Omaha; Eclectic Medical Institute, Cincinnati, 1884; aged 79; died, September 29, of myocarditis.

Joshua T. Jones, Plainview, Texas; St. Louis Medical College, 1884; aged 71; died, October 6, of cerebral hemorrhage.

Floyd Delos O'Brien, Chicago; Rush Medical College, Chicago, 1876; aged 78; died, October 17, of heart disease.

George C. Hardin, Murfreesboro, Tenn.; Meharry Medical College, Nashville, 1900; died, July 28.

Bureau of Investigation

GRAYBAN

Another Hair Dye Sold Under Misleading Claims

"Grayban," put out by Grayban, Inc., of New York City, is apparently a newcomer to the cosmetic field. The Bureau of Investigation is receiving many inquiries regarding this preparation, both from the general public and from the medical profession. An Ohio physician writes:

"Please advise if you know anything of Grayban, a preparation for coloring gray hair. The manufacturers claim it is not a dye, but in some mysterious way restores the lost pigment. Would also like to know if the *Good Housekeeping* magazine investigating bureau is headed by competent people. They sponsor this product as being what it is advertised."

A woman, also from Ohio, writes:

"I should like to have information regarding Grayban to banish gray hair. It is advertised in *Good Housekeeping* magazine and bears their seal."

A layman from San Francisco inquires:

"Do you have any information concerning a hair dye known as Grayban? As this dye is advertised in *Good Housekeeping* magazine, it would seem that the claim made by the manufacturers that it is perfectly harmless may be true."

A woman in the State of Washington writes:

"In September issue of *Good Housekeeping* I notice an advertisement marked with a star for Grayban to banish gray hair. After reading many articles in this magazine telling us there was no such thing, am surprised to find this advertisement."

A registered nurse from St. Louis, Mo., writes:

"What is Grayban? It is broadcast over the radio and sealed with the approved star of *Good Housekeeping* magazine as a preparation which is absolutely harmless and restores the natural color of the hair."

As one of the letters quoted above states, the September, 1932, issue of *Good Housekeeping* contained a two-column, full-page-length advertisement of Grayban. The advertisement was headed:

"A great scientist discovers how to BRING BACK NATURAL COLOR TO GRAY HAIR. The same golden liquid renews the color of blonde hair, brown, black or auburn."

Then follows the certified seal of the Bureau of Foods, Sanitation and Health of *Good Housekeeping* magazine. Further down in the advertisement there were emphasized these statements:

"This is the first advertisement of any preparation for imparting color to hair that has ever appeared in *Good Housekeeping* magazine."

"Grayban, by an entirely natural process, brings back your own true color—permanently, beautifully. The same golden liquid renews the color of blonde hair, brown hair, black hair, auburn hair."

It is not unusual in introducing a "patent medicine" or cosmetic to allow free rein to the imagination in telling the public the alleged genesis of the new wonder. The advertisement in the September *Good Housekeeping* declares that Grayban is "the miraculous discovery of a great scientist" who for years "labored to find a way to bring back natural color to the hair." A full-page advertisement of Grayban appearing in the August 6 issue of the *New Yorker* tells the public that Grayban is "the miraculous discovery of Carmelita Gomez, who, from far-off Trinidad, brought us this native secret." The story there ran that Carmelita, on returning to her native Trinidad, was greeted by her old friend, Diego Ibanez. Carmelita remembered him as a man of middle years, with iron-gray hair, but now "he stood before me young and handsome—with a splendid head of chestnut brown hair." Then Mr. Ibanez told the lady of "a strange formula imprisoned in two bottles, a native secret of Trinidad."

Possibly Grayban did originate in "far-off Trinidad." Possibly it was developed in the laboratory of a "great scientist." Possibly, or should we say probably, its exploiters merely put another hair-dye on the market and decided to invest a very ordinary product with an extraordinary birth history.

A specimen of Grayban was purchased on the open market —"regular price" $5.00; "for a limited time," $3.00! It consisted of two small bottles of modernistic design, each of about one fluidounce capacity and each corked with a hard rubber cap. One bottle, with a red rubber cap, contained a yellowish liquid; the other, with a black cap, contained a dark brown liquid. The package itself, a swanky affair in black and vermilion, had attached to it, both inside and outside, the gilt seal of the *Good Housekeeping* Bureau, with a red star. There was also a reproduction of the same seal on the circular that came in the package.

Printed boldly on the inside of the lid of the package was the statement: "Brings back the Natural Color to Gray Hair without the use of Dye." The circular in the package rang the changes on the same theme. It is necessary again to remind our readers that cosmetics do not, unfortunately, come within the scope of the National Food and Drugs Act. Many cosmetic preparations, therefore, whose trade packages contain claims that are false, misleading or fraudulent, cannot be declared misbranded because they are not "drugs" under the definition of the Act.

A great scientist discovers how to

BRING BACK NATURAL COLOR TO GRAY HAIR

The *same* golden liquid renews the color of blond hair, brown, black or auburn

TEN little drops of a precious golden fluid—and your hair begins to glow with its natural, youthful color! That is the miraculous discovery of a great scientist! For years he has labored to find a way to bring back natural color to gray hair—to renew it so perfectly and permanently that even a microscope would not reveal the secret.

Absolutely Safe—Harmless

Now—imprisoned in a bottle—is this miracle of science. Safe, harmless ingredients used for skin and scalp disorders are combined in a bland golden fluid to bring back all the youthful beauty of your natural hair coloring—all the sheen and highlights of young, healthy, beautiful hair.

If you are one of those who revolts against the use of dangerous dyes and "restorers," you need no longer tolerate the premature aging caused by gray hair. Grayban, by an entirely natural process, brings back your own true color—permanently, beautifully. The same golden liquid renews the color of blond hair, brown hair, black hair, auburn hair. There are no harsh or injurious substances in Grayban. It is absolutely safe even for the most delicate hair texture, even for hair that has already been bleached, dyed, waved.

Easy to Use in the Privacy of Your Own Home

A few simple applications of this precious fluid and your hair grows young again—all the beauty of its natural color renewed! All its lustre and softness restored. You are certain of success with Grayban—no possibility of those ruinous mistakes that take years to correct!

Grayban, the miracle of science, is already being sold at the best department and drug stores. If your favorite shop cannot supply you, send the coupon below direct to us. Grayban is sold on a money back guarantee.

GRAYBAN
To Banish Gray Hair

This is the first advertisement of any preparation for imparting color to hair that has ever appeared in Good Housekeeping Magazine

THIS COUPON IS WORTH $2.00 *for a limited introductory period*

Facsimile (greatly reduced) of a Grayban advertisement that ran in *Good Housekeeping* magazine for September, 1932.

The instructions in the use of Grayban were to shake eight drops of the liquid from each bottle into the palm of the hand and mix thoroughly, and then apply this mixture to the roots of the hair with the fingertips and rub in. What remained on the hands was to be applied to the hair. A hair brush and a medium-toothed comb were to be used to distribute the Grayban by alternately brushing and combing the hair from the roots to the ends.

The original package of Grayban was submitted to the A. M. A. Chemical Laboratory with the request that enough analytical work be done on it to determine to which class of hair dyes it belongs, the aniline type or the metallic-salts type. Hair dyes of the metallic-salts type belong to what is usually spoken of as "progressive dyes," as a number of applications

have to be made in order that the sulphide or oxide, as the case may be, of the metal may be deposited on the hair shaft in sufficient quantities to produce the color desired. The A. M. A. Chemical Laboratory reported that qualitative tests on the lighter-colored fluid, in the bottle with the red cap, indicated the presence of thiosulphate, probably present as sodium thiosulphate. Sodium thiosulphate is a chemical reducing agent, being most commonly known as the "hypo" of the photographers' developing room. The chemists also reported that qualitative tests on the dark fluid, in the bottle with the black cap, showed the presence of a bismuth compound.

Thus the "miraculous discovery" of either Carmelita Gomez or the "great scientist" seems to be nothing more wonderful than another one of the bismuth hair dyes. Formulas for hair dyes having some salt of bismuth as the chief ingredient appear in most books of formulas for hair dyes, and such products have been known for years. The fact that Grayban was another hair dye of the metallic-salt type proved that the claim that it would "bring back natural color to gray hair," as declared in the *Good Housekeeping* advertisement, was false. However, in order to demonstrate this point, gray hairs were obtained from individuals whose hair originally had been, respectively, reddish, brown and black. All of these specimens of gray hair were subjected to the Grayban dye—and all of them took on the same color!

It is probably true that Grayban is not especially harmful. But there are other things besides harmfulness to be considered in exploiting a product—such as the sometimes forgotten virtues of honesty and veracity. Certainly it would seem in order for a reputable magazine to insist, before granting its seal of approval to a commercial concern, that such concern be conducted on the lines of elemental business decency.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF GONORRHEA

To the Editor:—1. Can one assume that in every case of acute gonorrhea there is involvement of the posterior urethra and the prostate and that it is from here that one must eradicate the bacteria before a presumptive cure can be pronounced? 2. What is an accepted and rational course of treatment of an uncomplicated case of gonorrhea in a male? 3. What is the status of acriflavine and silver nitrate in gonococcal infection and what percentage of each is recommended? Please omit name.

M.D., California.

ANSWER.—1. Few things are more important than wide promulgation of the fact that, by gentle local treatment and good patient conduct, posterior urethral involvement can be prevented in at least 75 per cent of patients seen within one week of the onset of gonorrhea. Without these, at least 95 per cent of cases present involvement of the posterior urethra and prostate gland. In strictly anterior urethritis there is no need to think of eradicating the infection from the posterior structures—it is not there.

2. Any acceptable course of treatment of gonorrhea must be based on three definite principles:

(*a*) The patient gets well by virtue of the development of a temporary immunity to the particular gonococci responsible for his disease.

(*b*) The physician helps by patient guidance and efforts at the stimulation of this immunity, most efficiently by gentle local stimulation of the infected mucous membrane.

(*c*) Alcohol and sexual excitement (at times heavy physical exertions) will obliterate the patient's curative responses, no matter what the treatment.

Hence of first importance in the treatment of gonorrhea is the patient's cooperation to the end that he does not indulge in alcohol or sexual excitement and nullify the physician's efforts at treatment.

The gentle application of mildly stimulating substances to the infected mucous membranes either by hand injection or by hydrostatic irrigation is a most valuable means of treatment. Those most commonly employed are potassium permanganate, 1:8,000; strong silver protein, from 0.25 to 0.5 per cent; mild silver protein, 5 per cent. One or two applications in twenty-four hours, retained from five to ten minutes, are better than a larger number.

If the infection is confined to the anterior urethra, it alone should be treated. If the posterior urethra becomes acutely infected these local treatments should be stopped and oral sedatives be given, if needed. The patient should be instructed carefully to avoid heavy physical exertion with any quantity of infected urine in his bladder as a precaution against the development of epididymitis.

When vesical comfort has been regained entirely, it is well to give low-pressure (3 feet of fluid) intravesical irrigations (without catheterization) on alternate days until the first glass of urine is practically clear. It then is wise to start the promotion of prostatic drainage by the gentlest digital pressure on the gland and to increase the pressure of the strokings at later treatments as it is found safe to do so. If prostatic treatment causes a pronounced return of discharge, it should be withheld for a time. Pressure that causes great pain is too heavy for any prostate. Prostatic massage should be done twice a week and seldom accomplishes its purpose in less than from eight to twelve weeks.

3. Acriflavine hydrochloride in the treatment of gonorrhea has many friends. It is capable of doing great urethral damage if used too strong or too often. In solutions of 1:5,000, used not more than two or three times in twenty-four hours, it is safe and beneficial. Silver nitrate in solutions stronger than 1:10,000 does more harm than good to the anterior urethra. It causes the building up of protective epithelium (squamous) and encourages chronic urethral discharge. Also it ruins clothes and disfigures hands.

DYSMENORRHEA AND ALLERGY

To the Editor:—A white woman, aged 29, in good health, has menstrual periods regularly every twenty-eight days, with a good flow. Onset of menstruation occurred at the age of 13 and the patient had typhoid at 15. Since this time she has had severe cramping with each menstruation. Each period begins with a feeling of pressure in the pelvis. The flow starts immediately but lasts only one or two hours. The flow then stops and severe cramping begins. After a day the flow again starts and menstruation proceeds normally without cramping. During this cramping it is necessary to give half a grain of morphine, hypodermically, for relief. The patient was advised to become pregnant in order to obtain relief. She has two normal children, one aged 7 years and one aged 15 months. The deliveries were both normal, except that manual removal of the placenta was necessary following the last delivery. She was unable to nurse either baby. At the end of two months, following the birth of each child, she had a slight menstrual flow. The menstrual period at the end of the third month was entirely normal and without pain. With the fourth month the cramping, as described, began again and has continued. The patient's height is 5 feet 2 inches (157.5 cm.), weight 154 pounds (70 Kg.), with even distribution of the weight. The thyroid is slightly enlarged without apparent activity. The pulse is regular, with a rate of 80 per minute. The blood pressure is 120 systolic, 80 diastolic. The chest and abdomen are normal. Pelvic examination gives normal results. The blood Wassermann reaction is negative. The patient has been examined by many competent men, but at no time has there been discovered any abnormality or pathologic conditions. Preparations containing atropine and bromides are without any effect. She was given theelin, 1 cc. a day, for three days. The onset of cramping caused this to be discontinued. Her menstrual period following this began ten days before the usual time. This cramping is described by her as more severe than labor pains in that they continue constantly. Her mother and sister have similar trouble but much less severe. The patient is likewise subject to hay fever. Could this be a factor? She has been advised to have a complete hysterectomy. I am strongly opposed to such a procedure. Kindly omit name.

M.D., Missouri.

ANSWER.—Regardless of the severity of the pain at the menstrual periods, hysterectomy should be the last resort, especially in a woman only 29 years of age. Since the physical examination is entirely negative, there is no gross abnormality to correct. However, on purely empirical grounds and perhaps also for some psychic effect it is surely worth performing a dilation and curettement even though the patient has gone through two labors. The cervical canal should be slowly dilated to at least 14 mm. and a thorough curettement performed. It may also be advisable to leave in the cervical canal a grooved silver or hard rubber stem pessary for one or two months. This form of treatment is old fashioned, but some of the older gynecologists obtained good results with it. There is no harm in trying this, and it should certainly be attempted before a hysterectomy is seriously considered. Whether the hay fever has any connection with the severe menstrual cramps is difficult to say. D. R. Smith (*J. Missouri M. A.* **28**:382 [Aug.] 1931) reports twelve cases of essential dysmenorrhea for which he considered allergic changes responsible. By means of skin tests for the common foods he found that these women were sensitive to certain foods. These foods were omitted from the diet beginning one week before the

expected date of and during menstruation, and eight patients have been free from all pain at the menstrual periods. The other four received partial relief. Smith mentions that Duke in his monograph on asthma and allergy makes a statement concerning the disturbances of menstruation with allergy. It would be worth while in the present case to treat the hay fever as intensively as possible to see whether relief can be obtained from the menstrual cramps.

USE OF PARAVERTEBRAL INJECTIONS OF PROCAINE HYDROCHLORIDE IN ASTHMA

To the Editor:—A patient with bronchial asthma has resisted all therapy, including iodides, calcium, bronchoscopy, vaccine and elimination diets. In reviewing several articles on bronchial asthma, I noticed that paravertebral injections of procaine hydrochloride were mentioned. Can you tell me what type of case is benefited and any details of technic? Please omit name.

M.D., New York.

ANSWER.—Paravertebral injections of procaine hydrochloride have been given in some severe cases of chronic asthma as well as for the treatment of angina pectoris. In most cases the injections have been preliminary to the operation known as sympathectomy, in which the cervical sympathetic has been cut (in a few cases the vagus also has been sectioned). Enough of these procedures have been undertaken to warrant the following conclusions:

1. The operation, including injections of procaine, is a dangerous one and fatalities have occurred as a direct result.

2. The method is absolutely contraindicated until all other available means of investigation and treatment have been tried and have failed. No mention is made in the query of specific hypersensitiveness except in the words "elimination diets"; all the other methods of treatment given are nonspecific and, as such, they usually fail. It is highly important to go over the patient's history thoroughly, to try to find a clue, such as an animal, a hair mattress or a feather pillow, which can be eliminated. It is equally desirable to go through all the protein skin tests that are available. These include pollens, epidermals, furs, foods, and miscellaneous substances such as orris root, pyrethrum, cotton and silk. Partial testing is most undesirable, as the tests omitted may be the important ones.

3. The results to date of these operative methods have on the whole been unsatisfactory. In some cases relief has been obtained but relapses have occurred in a short time. In some, no relief at all was obtained, and in a few the results seem to have been excellent. The technic may be obtained from the following references:

1. White, J. C.: Angina Pectoris, *Arch. Neurol. & Psychiat.* **22:** 302 (Aug.) 1929.
2. Kümmel, H.: *Arch. f. klin. Chir.* **127:** 716, 1923.
3. Ramirez, M. A., and Pool, E. H.: Sympathectomy in Bronchial Asthma, THE JOURNAL, June 27, 1925, p. 2002.
4. Flörcken, H.: *Arch. f. klin. Chir.* **130:** 68, 1924.
5. Bottner, A.: *Med. Klin.* **21:** 197 (Feb. 6) 1925.
6. Hesse, E.: *Deutsche med. Wchnschr.* **52:** 870 (May 21) 1926.
7. Leriche, R., and Fontaine, R.: *Arch. méd.-chir. de l'app. respir.* **3:** 500, 1928.
8. Kern, R. A.: *Surg., Gynec. & Obst.* **42:** 28 (Jan.) 1926.
9. Gobell, R.: *Zentralbl. f. Chir.* **55:** 2951, 1928.
10. Labat, G.: Regional Anesthesia, Philadelphia, W. B. Saunders Company, 1922, p. 223.
11. Frey, E. K.: *München. med. Wchnschr.* **71:** 603 (May 9) 1924.
12. Kappis, M.: *Med. Klin.* **20:** 1347 (Sept. 28) 1924.
13. Kuttner, A.: *Deutsche med. Wchnschr.* **51:** 1066 (June 26) 1925.
14. Phillips, E. W., and Scott, W. J.: Surgical Treatment of Bronchial Asthma, *Arch. Surg.* **19:** 1425 (Dec., part 2) 1929.

SEX INSTINCT IN WOMAN AFTER MENOPAUSE

To the Editor:—A woman asked me what her sexual instinct would be following the menopause. Is it not true that it is impossible to say whether the instinct will be alive and even heightened, or dead? Also that it is not always possible to recommend abstinence in case the instinct is present? The factors of general health, heredity and sexual instinct during the years before the menopause have been discussed with her as affecting the approaching condition. As I understand it, there is no hard and fast rule which states that at the menopause woman's sexual instinct ends absolutely and that following that time she has no sexual desires. What are the current views on this question? Please omit name and address.

M.D., Michigan.

ANSWER.—There is no rule as to what will happen to the sexual instinct in a woman at the menopause. It may be heightened, decreased or the same as before. Children may be born after the menopause. Abstinence is not to be advised simply on account of the menopause. Sexual intercourse can do no harm at this time or thereafter, and even if the sexual passion is absent, it need not be refused to a husband. In other words, the indication or contraindication for sexual intercourse should be exactly the same after the menopause as before.

HEALTH HAZARDS FROM COPYING INK

To the Editor:—I have become interested by reason of illnesses among employees in the use of indelible ink and cleansing cream as used on the Ditto machine. This is a well known apparatus and perhaps has been fully investigated before. Particularly I should like to know the content of the cleansing cream manufactured by the Ditto Company for use in removing the ink stains. If you can give any information on this, I shall be deeply grateful.

EARL R. BUSH, M.D., Cincinnati.

ANSWER.—This reply deals with the hazards of this type of office supplies in general, without reference to the products of any particular company.

Copying ink (hectograph) is likely to contain methyl or crystal violet dye, alcohol, glycerin, and small amounts of hydrochloric acid. Carbon papers, for duplication purposes, may contain methyl or crystal violet, canauba wax and beeswax. Indelible pencils may use a lead made up of methyl violet, 50 per cent; graphite, 37.5 per cent, and kaolin clay, 12.5 per cent. Ink thinners at times contain denatured alcohol, methyl alcohol and possibly propyl alcohols. Liquid soaps recommended as ink detergents have been found to contain sulphonated castor oil (turkey red oil) and alcohols. The detergent pastes may contain such bleaches as chlorinated lime. Others utilize such substances as methyl cellulose, gellulose, glycolic acid, ether, glycerin, and organic solvents such as benzene. None of these agents in the quantities used in offices constitute major hazards. Methyl alcohol and benzene are dangerous when freely used. Methyl violet dye, particularly as used in pencil leads, is a destructive agent for corneal tissue of the eyes. Many of these chemicals may lead to dermatitis of the hands, and cases are frequent. A condition akin to sensitization may arise, forcing the office worker to seek other forms of employment.

URTICARIA

To the Editor:—A young unmarried woman with an essentially negative history has been afflicted for the past three years with daily attacks of urticaria. The usual attack consists of the appearance of one to a few medium-sized wheals on the face, chest or forearms, preceded by a sensation of itching or stinging, and the eruption disappears in a short time. The wheals usually appear without any apparent, recognizable or even suggestive reason; however, it is known that the slightest emotional disturbance is soon followed by a wheal or two at the sites mentioned. The patient at present is also suffering from a functional dysmenorrhea and her menstrual periods are irregular. Physical examination is negative except for hypotension, and urine examinations reveal a persistent marked phosphaturia. The patient has been placed on strict eliminative diets, with frequent catharsis and oral administration of such drugs as salicylates, atropine, alkalis and ephedrine. Nonspecific protein therapy has been tried. External irritants have been investigated, and soap has been found only at times to bring on an attack. Sedatives and psychotherapy have been used; it is practically impossible for the patient to avoid all excitement. The patient is mentally normal and cooperative. With the treatment outlined I have been only partially successful, the attacks being reduced in frequency. Please suggest other methods of treatment and probable etiologic factors. Kindly omit name.

M.D., New York.

ANSWER.—Chronic urticaria is frequently a baffling problem, but relief can usually be obtained in about three fourths of the cases. The causes are numerous and must be investigated one by one and all possible factors eliminated as completely as possible. These causes include foods, drugs, infections both acute and chronic, digestive disturbances, external irritants, and last but by no means least emotional conditions. There is also some evidence that inhalation of dust and pollen can cause hives; and, of course, urticaria is one of the main conditions that can follow injections of serum and of pollen extracts, horse dander, egg-white or insulin.

These possible causes should be looked into in this case. The foods should be scrutinized, with strict elimination diets; protein skin tests should be carried out and are of value in perhaps 20 per cent of the cases. They should be done completely and should include not only foods but also epidermals, pollens, furs, and miscellaneous items such as pyrethrum, silk, cotton and orris root. Incidentally, silk has been a frequent cause of urticaria and other skin lesions in young women. In such cases rayon silk can be substituted for silk with excellent results.

Drugs are common causes of urticaria and include acetylsalicylic acid, quinine, amidopyrine, phenolphthalein (contained frequently in laxative mixtures) and barbital compounds. All drugs should be eliminated.

Acute infections can cause hives, but usually only one attack of hives results. On the other hand, chronic focal infections probably are more important than has been thought. Such conditions as infected teeth, tonsils and gallbladders should be eliminated, if present.

Digestive disturbances, especially constipation, should be removed by proper diet and mild laxatives, such as liquid

petrolatum. External factors are frequent causes: a hair mattress or hair pillow may be responsible and should be eliminated. Hair washes, perfumes and certain soaps can cause trouble. Contact or patch tests can be tried here by moistening suspected materials and placing them on the back, covering them with gauze and oiled silk, and leaving them for from twenty-four to seventy-two hours.

After all these causes have been looked into and eliminated there will still remain a group of victims who will have their urticaria. These probably belong to the emotional or functional class, and psychotherapy is the best agent. If one can remove their worries and fears and lead their lives along lines which are less stormy, one is often gratified to find that the urticaria will lessen or disappear.

Besides these methods of treatment there remains a host of nonspecific measures, all of which have been disappointing, for the most part. These include calcium compounds and peptone by mouth or by injection, vaccines, injections of foreign proteins, and autohemotherapy. Now and then a good result occurs, so that these can be tried, if necessary.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 35, married, with one child, is now in excellent general health. The Wassermann reaction of his wife is negative. In February, 1931, he awoke one morning with visual disturbances; vision was not as acute as formerly and there was a tendency to see double. The Wassermann reaction of the blood was four plus. He was given seven injections of neoarsphenamine, 0.6 Gm., at five day intervals, with bismocymol midway between these. Then he took mixed treatment for three months. In November, 1931, the blood Wassermann was four plus. He was then given eleven injections intravenously, five of neoarsphenamine, 0.6 Gm., and six of arsphenamine, and again the bismocymol midway between the five day intravenous injections. In April, 1932, the Wassermann reaction of the blood was four plus; the spinal fluid examination with colloidal gold showed a tabetic curve. I then began a course of treatment as follows: Eleven injections of neoarsphenamine, 0.45 Gm., at five day intervals. Midway between these iodobismol for ten intramuscular injections. This was followed by mercurial inunctions daily for a period of six weeks. Iodides were not given, as the iodobismol contains iodides. Now he is resting from treatment for two weeks. When these two weeks of rest are up it is my plan to again give eleven injections of neoarsphenamine, 0.45 Gm., at five day intervals, and midway between the doses the iodobismol; then six weeks of mercury rubs. Can you suggest a better procedure? In case after this the blood and spinal fluid are still positive, what do you suggest? Is 0.45 Gm. of Searle's neoarsphenamine equivalent to 0.6 Gm. of other makes? I have read of some reports by good men of a colloidal mercury by Hille; in these cases is there any virtue in this product over the routine treatment? This case is baffling. How can I render the blood and spinal fluid negative; and if impossible to do so, what is the outlook for this patient? FRED HARRELL, M.D., Olney, Texas.

ANSWER.—It would be desirable to know more about the history and clinical examination. For instance, it is not clear whether other evidence of tabes is present besides the diplopia. Diplopia is seen in early meningeal neurosyphilis without tangible parenchymatous changes. In the event that this is still a case of reasonably early neurosyphilis, routine injections of arsphenamine, bismuth compounds and mercury may be advantageously combined with intraspinal injections according to the Swift-Ellis method; these are not so satisfactory when definite parenchymatous changes are present. The possibility of early dementia paralytica with tabes must be kept in mind. It would seem desirable to give another course of the standard neoarsphenamine injections beginning in August, this to be combined with either bismuth or mercury. At the end of this course another spinal fluid examination should be made. If the spinal fluid still proves strongly positive, the malaria treatment should be considered. If the serologic response is satisfactory, however, routine treatment might be continued for some time, especially with bismuth. All cases of early neurosyphilis are serious problems, chiefly because of the tendency to parenchymatous involvement later; a fairly large percentage, however, respond to perseverence in routine measures.

The Council on Pharmacy and Chemistry has recently gone on record as opposed to the use of the colloidal mercury preparation by the intravenous route. Because of the large amounts of metallic mercury likely to be deposited in various parts of the system and not excreted, the use of this preparation intravenously is not considered a safe clinical procedure. It is impossible to evaluate fully the relative merits of the arsphenamine and bismuth preparations of various manufacturers. Such preparations should be obtained from manufacturers who have a reputation to sustain. The use of bismuth preparations in the treatment of syphilis was discussed at some length in THE JOURNAL, May 16, 1931, page 1721. Other references that may be consulted include H. H. Hazen: The Low Therapeutic Index of Neoarsphenamine, THE JOURNAL, March 2, 1929, page 696, and E. T. Burke: The Adequate Treatment of Syphilis and a New Method for Evaluating Therapy *(Am. J. Syph.* **15**:155 [April] 1931.

PYELITIS AND FREQUENT MICTURITION AFTER COITUS

To the Editor:—My sister, aged 20 years, was married about six months ago. She has always been in good health, the family history is good, the menses have been easy without pain or cramps, with a period of twenty-eight days, and always regular. Two years ago, treatment was given for a mild leukorrhea. About one month after the first coitus a sudden attack of frequent micturition would come after each coitus, usually the following day. On the first attack, an analysis was made of the urine, and the following was found (the sample was not taken with a catheter): slightly cloudy, yellow, odor normal, acid 22, indican and sugar negative, a few epithelial cells, many pus cells, no crystals, a fair amount of albumin, very many colon bacilli. The desire to pass urine would come about every hour. There was some blood and much pain and burning. For three days a systemic alkalization was tried but gave no results. A friend of mine, a general physician, made an examination (digital) and said there was no displacement. A tenderness was found at the trigon and the diagnosis was trigonitis. Treatment with methenamine gave almost immediate relief but did not clear up the condition, so change was made to a urinary dye for a period of thirty days, whereupon the condition improved and, it might be said, completely cleared up. There was no coitus for two months until two weeks ago. The next day, after the attack of frequent micturition, the dye treatment again gave relief and the condition stopped. There has been no coitus. The thoughts of the after-results have caused a mental fear of what might happen. I do not question the diagnosis or treatment advised by my friend, but just why do these attacks follow each coitus? Please omit name.

M.D., Washington.

ANSWER.—The syndrome reported is not complete enough to allow a correct diagnosis, based on which a rational method of treatment may be suggested. One may make a good guess at the existence of a recurrent pyelitis. In order to ascertain positively the pathologic condition it will be necessary to explore the interior of the bladder by cystoscopy and to catheterize the ureters to furnish the material for the analysis of the urine coming down from each kidney. Chemical examination of the blood and determination of the chloride output in the total urine will round out the picture. Abnormalities appearing in a plain roentgenogram will call for additional pyelography, in order to discover or eliminate the presence of renal tumor. Marked deviation from the normal in the chemical examination of the blood points to nephritis, and a proper antinephritic regimen may be administered. Lack of evidence of a tumor and failure to determine renal functional deficiencies points to the existence of hemorrhagic pyelitis. Considering the persistence of the symptoms, local treatment by pelvic lavage may be employed in order to relieve the pyelitis. Alkalization is helpful only in case the urine shows decided acidity, thus revealing infection by a colon bacillus strain that grows in an acid medium. The discovery of a renal tumor of course calls for surgery. In case the entire pathologic condition should be confined to the bladder, instillations of some silver salt solution may be systematically administered.

NEURODERMATITIS CIRCUMSCRIPTA

To the Editor:—Will you kindly advise me as to what I should do in the following case: A baby, aged 14 months, has had for seven months a crusting, weeping dermatitis behind each ear, most prominent at the fold marking the junction of the external ear and the head. It improves and gets worse spontaneously, regardless of season or temperature. Scratching has been controlled but this does not clear it up. I have used 10 per cent silver nitrate locally, which seems to help some but not entirely. Otherwise the baby is in excellent shape, is on the usual diet, and has never had any other skin eruptions such as eczema of the face. Please omit name.

M.D., Illinois.

ANSWER.—It is frequently difficult enough to diagnose a skin lesion under direct observation. To venture an opinion without careful inspection is hazardous. In dermatologic diagnosis one is expected to give the condition a name. The description contained in the query indicates that the infant shows no allergic reaction to foods and no tendency for the process to spread to other parts of the body. The description suggests a postauricular eczema or, to define it more specifically, a neurodermatitis circumscripta. The continuance of the application of a 5 or 10 per cent solution of silver nitrate for the moist or secreting stage may be recommended, and in the interval the affected area may be painted with pure coal tar. Since there is no generalized reaction, one should refrain from dietary or constitutional treatment. Since these babies are frequently of neuropathic constitution, this infant should be handled calmly and quietly without emotional outbursts or overstimulation.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Milwaukee, June 12. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General, oral and clinical.* Los Angeles, Dec. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Dec. 14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Endorsement.* Hartford, Nov. 22. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Wilmington, Dec. 13-15. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, 706 Franklin St., Tampa.

KANSAS: Topeka, Dec. 13-14. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 6-8. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MISSISSIPPI: *Reciprocity.* Jackson, Dec. 12. Sec., Dr. Felix J. Underwood, Jackson.

NEBRASKA: Lincoln, Nov. 29-30. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: Raleigh, Dec. 5. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 6-8. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

VIRGINIA: Richmond, Dec. 7-9. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WEST VIRGINIA: Morgantown, Nov. 16-18. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 17. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Ohio June Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports the oral, written and practical examination held in Columbus, June 7-10, 1932. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two hundred and thirty-seven candidates were examined, 231 of whom passed and six failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1928)	81.7
George Washington University School of Medicine		(1931)	83.5
Howard University College of Medicine		(1931)	78
Loyola University School of Medicine		(1932)	81.7, 84.2
Northwestern University Medical School		(1932)	84.2, 86.7*
University of Louisville School of Med		(1931) 80.8, (1932)	82.5
Boston University School of Med		(1930) 85.1, (1931)	79.8
University of Minnesota Medical School		(1932)	75
St. Louis University School of Medicine		(1931)	80.2
University of Nebraska College of Medicine		(1926)	85.1
New York Homeopathic Med. Coll. and Flower Hosp.		(1931)	84.2
University of Rochester School of Medicine		(1931)	79.7, 82.6, (1932) 76.5, 79.7
Ohio State University College of Medicine		(1932)	77.8, 78.3, 78.4, 78.7, 79.8, 80, 80, 80.2, 80.9, 81.1, 81.2, 81.2, 81.2, 81.4, 81.6, 81.7, 81.8, 81.9, 82.1, 82.5, 82.6, 82.7, 82.7, 82.7, 82.7, 82.8, 82.8, 82.8, 82.9, 83, 83.1, 83.1, 83.1, 83.4, 83.4, 83.4, 83.5, 83.5, 83.7, 83.7, 83.7, 83.8, 84, 84, 84, 84.1, 84.2, 84.2, 84.9, 84.9, 85.1, 85.1, 85.2, 85.2, 85.4, 85.5, 85.5, 85.6, 85.7, 85.7, 85.8, 86, 86, 86.1, 86.3, 86.8, 86.8, 87, 87.6, 87.8, 87.8, 87.9, 88.2, 90.7
University of Cincinnati College of Medicine		(1932)	76.2,* 76.4,* 78.3,* 78.4,* 78.5,* 78.8,* 79.2,* 79.2,* 79.5,* 80.4,* 80.5,* 80.6,* 80.7,* 81,* 81.1,* 81.1,* 81.2,* 81.4,* 81.5,* 81.6,* 81.9,* 82,* 82,* 82.1,* 82.2,* 82.5,* 82.8,* 83,* 83.1,* 83.1,* 83.2,* 83.4,* 83.4,* 83.5,* 83.5,* 83.5,* 83.5,* 83.5,* 83.6,* 83.6,* 83.7,* 83.7,* 83.8,* 83.8,* 83.8,* 83.9,* 84,* 84,* 84.1,* 84.2,* 84.2,* 84.3,* 84.5,* 84.6,* 84.7,* 84.9,* 85.2,* 85.6,* 86.3,* 87.4*
Western Reserve University School of Medicine		(1931)	83.7, (1932) 78.9, 80.2, 81.2, 81.4, 81.4, 81.5, 81.5, 81.8, 81.9, 82, 82.1, 82.5, 82.5, 82.5, 82.5, 82.6, 82.7, 82.7, 82.7, 82.8, 82.8, 82.9, 82.9, 83, 83, 83.1, 83.1, 83.3, 83.4, 83.4, 83.5, 83.6, 83.6, 83.6, 83.8, 83.9, 83.9, 83.9, 84, 84.1, 84.1, 84.2, 84.2, 84.2, 84.7, 84.8, 85.3, 85.5, 85.5, 85.6, 85.7, 85.8, 85.9, 86.3, 86.7, 86.9
University of Oregon Medical School		(1931)	77.6
Hahnemann Med. College and Hospital of Philadelphia		(1931)	81.9
Jefferson Medical College of Philadelphia		(1930)	78.3, 82.4, (1931) 84.2, (1932) 82.4, 82.5, 83.4, 83.5, 84.2, 84.5, 84.6, 86, 86.6
University of Pennsylvania School of Medicine		(1930)	83.2, 83.4, (1931) 79.6, 81
University of Pittsburgh School of Medicine		(1931)	80.7
Woman's Medical College of Pennsylvania		(1926)	80.1
Marquette University School of Medicine		(1932)	78.8
University of Wisconsin Medical School		(1931)	79.5

College	FAILED	Year Grad.	Per Cent
University of Alberta Faculty of Medicine		(1929)	72
University of Toronto Faculty of Medicine		(1923)	71.9
Laval University Faculty of Medicine		(1928)	66.8
University of Montreal Faculty of Medicine		(1929)	65.7
University of Athens School of Medicine		(1917)	52.1
Royal Univ. of Palermo Faculty of Med. and Surg.		(1926)	68

* These applicants have received an M.B. degree and will receive an M.D. degree on completion of an internship.

Washington July Report

Mr. Charles R. Maybury, director, Department of Licenses, reports the written examination held in Seattle, July 11-12, 1932. The examination covered 8 subjects and included 80 questions. A grade of 60 per cent in each subject was required to pass. Twenty candidates were examined, all of whom passed. Nine physicians were licensed by reciprocity with other states and 11 physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1931) 74, (1932)	81
Northwestern University Medical School		(1932)	75
Rush Medical College		(1932)	78, 79
University of Illinois College of Medicine		(1932) 74, 75,	76
Indiana University School of Medicine		(1926) 74, (1931)	77
University of Kansas School of Medicine		(1929)	78
Boston University School of Medicine		(1927)	76
Harvard University Medical School		(1930)	80
University of Minnesota Medical School		(1932) 74,	77 *
University of Nebraska College of Medicine		(1931)	76
Western Reserve University School of Medicine		(1929)	75
University of Oregon Medical School		(1931)	75
Jefferson Medical College of Philadelphia		(1930)	79
Osteopath			†

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1925)	California
Northwestern University Medical School		(1901)	Idaho
Indiana University School of Medicine		(1927)	Minnesota
State University of Iowa College of Medicine		(1928)	Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons		(1931)	Maryland
University of Oregon Medical School		(1922), (1931, 2)	Oregon
University of Virginia Department of Medicine		(1931)	Virginia

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1932, 2)	N. B. M. Ex.
Northwestern University Medical School		(1928)	N. B. M. Ex.
Harvard Univ. Med. Sch.		(1925), (1929, 2), (1930), (1931)	‡N. B. M. Ex.
Washington University School of Medicine		(1927), (1928)	N. B. M Ex.
Jefferson Medical College of Philadelphia		(1930)	N. B. M. Ex.

* This applicant has received his M.B. degree and will receive his M.D. degree and Washington certificate on completion of internship.

† No grade given. Licensed to practice osteopathy and surgery.

‡ Certificate withheld pending completion of internship.

Michigan Endorsement Report

Dr. Nelson McLaughlin, secretary, Michigan Board of Registration in Medicine, reports 42 physicians licensed by endorsement from Jan. 2 to Sept. 19, 1932. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Hahnemann Medical College and Hospital, Chicago		(1906)	Illinois
Loyola University School of Med.		(1929) N. Dakota, (1932)	Illinois
Northwestern University Medical School		(1897)	Illinois
Rush Medical College		(1897) Indiana, (1912), (1931)	Illinois
University of Illinois College of Med.		(1916) Iowa, (1932)	Illinois
Indiana University School of Medicine		(1909), (1926)	Indiana
Medical College of Indiana		(1902)	Indiana
State University of Iowa College of Medicine		(1930)	Iowa
University of Kansas School of Medicine		(1931)	Kansas
University of Louisville School of Medicine		(1930)	Ohio
Tulane University of Louisiana School of Medicine		(1930)	Texas
University of Maryland School of Medicine and College of Phys. and Surgs.		(1916) W. Virginia, (1931)	Ohio
Boston University School of Medicine		(1925)	New Jersey
Harvard University Med. School.		(1926) California, (1929)	W. Virginia
Tufts College Medical School		(1906)	Mass.
Creighton University School of Medicine		(1922)	Illinois
University of Buffalo School of Medicine		(1930)	New York
Eclectic Medical College, Cincinnati		(1915), (1919)	Ohio
Eclectic Medical Institute, Cincinnati		(1895)	Ohio
Ohio State University College of Medicine		(1914)	Ohio
Western Reserve University School of Medicine		(1930)	Ohio
University of Oklahoma School of Medicine.		(1924), (1930)	Oklahoma
Jefferson Medical College of Philadelphia		(1913)	Penna.
University of Pittsburgh School of Medicine		(1930)	Penna.
Meharry Medical College		(1903) Arkansas, (1931)	Tennessee
Baylor University College of Medicine		(1931)	Texas
University of Virginia Department of Medicine		(1925)	Virginia
Marquette University School of Medicine.		(1928) Minnesota,	Wisconsin
University of Wisconsin Medical School		(1927)	Wisconsin
University of Manitoba Faculty of Medicine		(1925)	Illinois
University of Toronto Faculty of Medicine		(1928)	W. Virginia

Book Notices

Minor Surgery of the Urinary Tract. By Hermon C. Bumpus, Jr., Ph.B., M.D., M.S., in Urology, Section on Urology, the Mayo Clinic. With a chapter on Caruncles, by John L. Crenshaw, M.D., Section on Urology, the Mayo Clinic, and a chapter on Postoperative Care, by Anson L. Clark, M.E., M.D., Section on Urology, the Mayo Clinic, Rochester, Minn. Cloth. Price, $3. Pp. 124, with 57 illustrations. Philadelphia and London: W. B. Saunders Company, 1932.

This book, the contents of which are limited to a discussion of minor surgical procedures of the urinary tract, is one of a series of Mayo Clinic monographs. Lesions of the lower tract are not few and therefore constitute an important phase of urology—the best field for the application of these procedures. The chapter on anesthesia, preparation of the patient, sterilization of instruments, irrigating solutions and electrical equipment is well done and cannot fail to have points of interest for the reader. When dealing with stricture of the urethra the matter—an important one, indeed—of the avoidance of trauma is stressed, and the various instruments that should be used and their method of application are described in detail. The nonoperative treatment of benign hypertrophy by means of transurethral resection, as employed by Bumpus, receives due consideration. Carcinoma and contracture of the neck of the bladder are briefly mentioned, but, on the other hand, caruncle of the urethra—its diagnosis and surgical treatment—comes in for a detailed account. The advantages of litholapaxy over cystotomy in connection with the treatment of stones in the bladder are emphasized, and the contraindications to litholapaxy in certain cases are clearly and succinctly stated. As regards tumors of the bladder, the type suitable for transurethral treatment is discussed, and special mention is made of the various electrodes in fulguration of papillomas. The technic of implanting radium seeds in cases of a malignant tumor receives due attention, and the importance of mastering the technic is illustrated in a number of significant lines. The only lesion of the upper tract that is considered is stone in the ureter. It goes without saying that the correct diagnosis of this disturbance is not considered of minor importance but an exceedingly momentous matter. Selection of cases for nonoperative treatment, the contraindications, chances of success, and the various instruments that should be used, are described with no redundance of words to obscure the author's thought. The postoperative period of the urologic patient is dwelt on, and a number of points are advanced to illustrate the importance, on the part of the urologist, of exercising extreme care in his attitude toward the patient during that time.

Contribution à l'étude du traitement de la paralysie générale: L'impaludation cérébrale. Par le Docteur Jean Coulloudon, Intern des Asiles de la Seine. Paper. Pp. 179. Paris: Librairie Le François, 1932.

The author devotes eighty pages to a description of the present and older forms of treatment of dementia paralytica. In this survey he concludes that the only really valuable therapy is that of inoculation with malaria. He says: "The treatment of dementia paralytica by means of arsenicals, bismuth, mercury, vaccines, diathermy, and so on has but few proponents. It is true that a certain number of clinicians use acetarsone; yet for the most part chemotherapy is but an adjunct of malaria therapy." This would seem to be an extreme continental and specifically French view, since acetarsone (stovarsol) is hardly ever used by any but French physicians, and many forms of treatment besides that with malaria are now in common use in the United States. There is a lengthy discussion of the technic of practically abandoned methods, such as the use of intraspinal and intraventricular and subarachnoidal injections of various medications and drugs. These facts are solely of historical interest and might have been condensed. On the other hand, the author does not even mention the new theories of the effect of heat on the spirochete as has been shown by the researches of Bessemans, Jahnel, Schamberg, Mehrtens and others. He does not discuss fever therapy on its own merits or the effect of fever on dementia paralytica. This neglect is the more striking because so much space is used in the description of antiquated methods. The author still clings to the idea that there is something mysteriously potent and spirocheticidal connected with malaria therapy.

Hence the second part of the volume is devoted to the inoculation of the patient with malaria by the intracerebral or intraventricular route. For this purpose a minute trephine opening is made in the skull 3 cm. anterior and lateral to the site of the fontanel. A spinal puncture needle is introduced into the white substance of the brain and from 1 to 5 cc. of citrated malarial blood is injected into the white substance of the frontal lobes. If one prefers to inject the lateral ventricle with citrated blood, from 5 to 15 cc. of ventricular fluid is first withdrawn. The procedure is not tolerated as well as the former, since it often causes extremely distressful headaches and dizziness. After intracerebral inoculation, malarial fever develops in about eight days, though extreme periods of incubation between six and sixteen days have been observed. When the intraventricular method is employed there is usually an abrupt rise of the patient's temperature directly following the operation; the temperature then subsides and malarial fever develops after an interval of six or eight days.

The author reports seventy cases of intracerebral inoculation and twenty-three cases of intraventricular inoculation. He states that fifteen of the seventy cases were mentally cured and thirty-two were improved, corresponding to 21 and 46 per cent. Three of the twenty-three cases of intraventricular inoculation, or 13 per cent, were practically cured. Twelve, or 35 per cent, were more or less benefited by the treatment.

These statements look more impressive in the author's tables than they do after one has read some of the histories given in detail. From them it would seem that the only results that were really worth while were obtained in the eighteen so-called cured cases. These patients returned to work. In other words, there is a remission rate of about 26 per cent, which corresponds to that usually obtained after treatment with malaria.

In all, the author gives detailed histories of fifteen cases in which intracerebral inoculation was done and seven in which inoculation was done by the ventricular method. Of the seven cases cited as cured by the intracerebral method, high temperatures were recorded in five, while the history made no statement as to whether or not fever occurred in two cases. All patients on whom the intraventricular method was tried experienced a rise of temperature directly after treatment, and typical malarial fever developed in the two so-called cured patients. One is therefore surprised that the author pays so little attention to the value of fever per se. According to his own statements, his method is directly responsible for three deaths. Two of these occurred immediately after intraventricular injection and one in conjunction with intracerebral inoculation. Convulsions, confusional episodes, transitory aphasia and hemiplegia frequently occur, following the operation. It is surprising that no deaths were reported as a result of the malarial infection or of its later complications. This would seem to indicate that the author chose fairly robust patients for his experiments.

Summing up, it is apparent that this method of malarial inoculation is more difficult and complex than the method usually employed, that it is fraught with danger especially when the intraventricular route is used, and that the end-results do not surpass those ordinarily observed after malarial therapy.

Milk Production and Control: Communicable Diseases, Public Health Supervision, Nutritional Aspects, Economic Aspects. Report of the Committee on Milk Production and Control. H. A. Whittaker, Chairman. White House Conference on Child Health and Protection. Cloth. Price, $3. Pp. 392. New York & London: Century Company, 1932.

This volume embodies a comprehensive study and report by the Committee on Milk Production and Control of the White House Conference on the public health, nutritional and economic aspects of the milk supply of the United States. Information on milk is assembled for promoting and protecting the health and welfare of children. Four distinct phases of the subject are ably and thoroughly treated: the relation of milk to communicable diseases, the public health supervision of milk, the nutritional aspects of milk, and the economic aspects of milk. Under the first phase are assembled information on human and bovine diseases that may be or are milk borne, the epidemiologic evidences of each disease, and the number of recorded outbreaks of disease that were traced to milk or milk products during the six year period from 1924 to 1929; under the second, collected data on the essential elements of milk supervision, the legal aspect of its supervision, the measurement of the results of

milk supervision effort, and the present status of milk supervision in this country; under the third, the nutritive properties of cow's milk and milk products; under the fourth, data on the consumption of fluid milk and milk products, the production, marketing, transportation, processing and delivery of milk, and the economic importance of the sanitary quality of milk and cream. The assembled data, information, and recommendations of the committee are given in succinct form and are especially helpful constructively and practically to all those responsible for or interested in the health and development of children. Valuable reference bibliographies accompany the subtopics treated. The work provides in a simple manner a thorough general understanding and comprehension of the entire subject as recognized by the best minds and authorities versed in milk-borne diseases, public health supervision, the nutrition of infants and children, and the production and marketing of hygienic milk and milk products. The book is especially valuable for physicians, public health authorities, and the milk and milk products industry as a whole.

Allgemeine und spezielle Elektrochirurgie. Von Dr. med. Hans v. Seemen, Privatdozent für Chirurgie an der Universität München. Mit einem Beitrag: Elektrochirurgie der Geschwülste in Verbindung mit Strahlenbehandlung. Von Dr. med. Otto Schürch, Privatdozent für Chirurgie an der Universität Zürich. Paper. Price, 62 marks. Pp. 474, with 347 illustrations. Berlin: Julius Springer, 1932.

The author discusses the history and development of electrosurgery, beginning with heat as used by ancient healers. The theory and the various types of electric current are discussed, with illustrative diagrams. The technic of use of different currents, including the desiccating, coagulating and cutting currents, is described together with the changes produced in the tissues.

Special and regional surgery in which electrosurgery is of particular value include conditions of the brain, the mouth and jaws, the bladder, the prostate and the rectum. In the parenchymatous viscera it is of great value in controlling hemorrhage. In infiltrating malignant growths it is of definite value by permitting thorough destruction without unnecessary mutilation and loss of blood.

The author has included a section in which the combination treatment of either the roentgen rays or radium and electric currents are used. This combination has proved of value in regions of the body where recurrence is common.

Numerous illustrations of pathologic conditions are included. Unfortunately, no effort has been made to include a systematic follow up of the results as compared to a control series done with the scalpel. In spite of any evidence of this sort, the author implies a superiority of electrosurgery over other methods and minimizes some of the disadvantages. It is doubtful whether one experienced in general surgery and also familiar with the use of electrosurgery would make such general use of the latter. It is evident that electrosurgery has a definite and superior value in certain surgical conditions. The indications for its use and the technic should be familiar to the general surgeon. He may learn its possibilities and familiarize himself with its use by referring to this exhaustive monograph.

An Introduction to Biochemistry. By Roger J. Williams, Ph.D., Professor of Chemistry, University of Oregon. Cloth. Price, $4. Pp. 501. New York: D. Van Nostrand Company, Inc., 1931.

This volume is just what its title indicates—an introduction. It could not be a complete treatise because of its relatively small size. In an introductory volume the opportunity is given for discussing subjects in such a way that a view of the whole field is developed without going into any one subject exhaustively. It must not be inferred that this volume is elementary in character. Biochemistry—the meeting place of all the fields of chemistry and of biology—cannot be elementary. Considerable chemistry and biology must be at the students' disposal if any biochemistry is to be understood. The author outlines his book as follows: (1) composition of the organisms; (2) food material required by the organisms; (3) transformation of these food materials into the materials composing the organisms. The outline is closely adhered to. If it is kept in mind during the study of the volume, a broad aspect of the field of biochemistry is obtained. The volume is well written; it is down to date on the more recent developments in biochemistry.

Le traitement de la tuberculose par l'antigène méthylique (antigénothérapie). Par L. Nègre et A. Boquet, chefs de service à l'Institut Pasteur. Préface du Pr Calmette. Paper. Price, 35 francs. Pp. 236, with 15 illustrations. Paris: Masson & Cie, 1932.

This is the second volume of the Bibliothèque de phtisiologie, edited by Léon Bernard, the first volume of which was reviewed, April 30. The subject matter deals with a "methyl antigen," first prepared by the authors at the suggestion of Professor Calmette in 1920. Since then they have carried out experimental work, to determine its antigenic, immunizing and curative properties in vitro and in vivo. The antigen differs from many others of similar nature in containing no acetone soluble products. It is a methyl alcohol extract of tubercle bacilli previously extracted with acetone. Experiments seem to show that the elimination of the acetone soluble fraction is important in rendering the product more powerful and specific as an antigen for complement fixation, and more effective and less toxic as a therapeutic agent. The action is attributed to phosphoproteins which come off with the lipoids. Although there are many other antigenic substances that have been demonstrated, this group is thought to be the most active antigen as well as an active agent to stimulate fibrosis and healing.

The more important features of the work are the therapeutic experiments in animal and in human tuberculosis. In guinea-pigs and rabbits, numerous experiments have been performed with varying time, dosage and virulence, with the result that the authors have claimed a definite arrest of symptoms and prolongation of life of the treated animals compared to the controls. This effect was judged by a decrease in toxicity, gain in weight, a normal leukocytic formula (L/M) and an increase in fibrosis around the lesion. As the controls were rather scanty and the prolongation of life was of the order of from 15 to 25 per cent, it would seem that as a leading therapeutic agent the methyl antigen falls far short of the mark. Rabbits are particularly apt to give individual variations in their reactions to tubercle bacilli, and work established on their reactions is always more or less dubious even when the results are clear cut. In the various experiments the optimal dose for the rabbits was found to be about 1 cc. of antigen given twice a week, while a 0.1 cc. dose was definitely too small. In the human patients, however, the maximum dose (per kilogram of body weight) is found by calculation to be thirty times less than the optimal rabbit dose and three times less than the dose that gave poor results in rabbits. The only difference is that the human treatments were given subcutaneously. While it is true that the human patients may differ from the rabbits in response to the product, the comparison is made to show that there is really no valid animal experimental basis for the antigen as a therapeutic agent in human tuberculosis.

Analysis of the results on human patients is not a simple task. The work has been carried out in the main by reputable clinicians in Europe and South America, who have been inspired to a high degree of optimism throughout. Only in three or four instances were there negative results, and in less than that were there any bad results. Courcoux, for one, speaks of flaring up in three latent cases of pulmonary tuberculosis when their lymphatic tuberculosis was being treated.

Widely different types of tuberculosis have been treated. Simple acute adenitis, freshly suppurating adenitis and even old suppurating cases more slowly are said to clear up or improve with three or four mouths' treatment. Only a minority, or about 20 per cent, fail to respond. The signs of improvement are disappearance of perifocal inflammation (and suppuration in open cases), reduction of temperature, shrinking of lesions, gain in weight, gain in color and a feeling of well being on the part of the patient. In the patients that recover entirely there is said to be a complete disappearance of the lesions. Almost all extrapulmonary tuberculosis responded in the same manner. All forms of pulmonary tuberculosis except the acute stage in active evolution, and hemorrhagic or oversensitive types, are said to be improved. Sayé and Seix seem to have made a practical demonstration of the usefulness of the antigen by substituting it for therapeutic tuberculin. The results appear to be better without the risks of tuberculin. Because of the overburdened literature, clinicians should see the need of control in their work, when possible, before offering

it for publication. Carefully controlled original work would eliminate the necessity many times for repetition. It is well known that under good care a large percentage of the patients would have recovered without the antigen, and others have no place in the report at all (especially is this true of nontuberculous psoriasis). As a major therapeutic agent, therefore, the case is still unproved. It seems to be only one more of the near-cures that have appeared periodically since Koch's tuberculin. As an antigen, it may be recommended to serologists as valuable for complement fixation work in tuberculosis.

Studies in the Dynamics of Behavior. By Calvin P. Stone, Chester W. Darrow, Carney Landis, Research Psychologists, Behavior Research Fund, and Lena L. Heath, Research Assistant. Edited by Karl S. Lashley. Cloth. Price, $5. Pp. 331, with illustrations. Chicago: University of Chicago Press, 1932.

The studies presented in this volume are of particular significance because they represent an experimental approach to the study of behavior. As Lashley says in the introduction, "The studies . . . must be judged, to some extent, as an adventure in methodology." The first study is divided into three major parts: first, ratings for wildness and savageness; second, dominance of the hiding tendency over hunger; third, maze learning, in all of which comparisons are made between various groups of rats ranging from adult wild animals through several groups of hybrids to tame albino laboratory stock. The second study reports the results of a study of twenty-one measures of physiologic reaction in relation to the Thurstone neurotic inventory and the Northwestern University introversion-extroversion test. The authors say, as a result of their study, "We must conclude that in no instance have we demonstrated the temperamental type, as defined by the questionnaires used, is a result of the physiological traits measured." However, it does seem that some of the profiles of correlations in the test groups tend to throw at least a suggestive light on personality constellations. The data deserve careful study. The third contribution is a comparative evaluation of the various methods of testing or measuring emotion, emotional instability and emotional psychopathy. While it suffers somewhat through lack of precision of definition of terms used and inadequate accounts of the backgrounds of the cases chosen as illustrations, it remains a particularly valuable study because of the negative results obtained in the attempts at correlation between the various tests. The authors significantly conclude: "The present experimental test methods are not adapted to answer either positively or negatively the questions concerning personality traits." The volume should be carefully studied by those who are interested in the dynamics of behavior and the methods by which they may be studied.

The Life Line of the Thyroid Gland: A Contribution to the Study of Goitre. By Colonel R. McCarrison, C.I.E., M.D., Honorary Physician to the King, Director, Nutritional Research, Indian Research Fund Association, and K. B. Madhava, M.A., A.I.A., Professor of Statistics, University of Mysore. Indian Medical Research Memoirs, No. 23. Supplementary Series to the Indian Journal of Medical Research. Published for the Indian Research Fund Association. Paper. Pp. 378, with 34 illustrations. Calcutta: Thacker, Spink, & Company, Ltd., 1932.

In this volume, which deals mainly with the work done in the senior author's laboratory during the last three years, are traced the normal course of growth of the thyroid gland in experimental animals, and the effects on its development of various diets, iodine, sex, season, and sanitary condition. The large amount of valuable data on nutrition and dietary deficiencies which Colonel McCarrison has accumulated have been subjected to an intensive statistical scrutiny from the standpoint of goiter. The authors make the problem of goiter unnecessarily complicated by their methods of classification; for example, it is difficult to understand "the classical type of endemic goiter," "the diffuse colloid goiter of the plains," "the goiter met with in New Zealand," "childhood goiter" and "sporadic goiter" as five different types of goiter. They consider diet an important factor in the genesis of goiter; but because enlargement of the thyroid gland does not develop in the majority of individuals on deficient diets, they postulate the existence of yet another goitrogenic agent, a metabolic or bacterial toxin, or contagium vivum. The antigoitrogenic power of iodine they consider to be due either to a local antiseptic action in the soil or to a similar antiseptic action in the body, either directly or through the thyroid gland, an action difficult to appreciate when one considers the minute amount of iodine that is capable of preventing thyroid enlargement. The occurrence of congenital goiter in the young of thyroidectomized female dogs they attribute to the accumulation consequent on thyroid insufficiency of toxic metabolites which unduly stimulate the fetal gland. The more commonly accepted view is, of course, that congenital goiter is a work hypertrophy as a result of deficient production of maternal thyroid hormone. Many of the conclusions drawn from the experimental data are not justified: thus, to give only two examples, on page 179 they state that "insanitary condition exercises a well defined goitrogenic action," a conclusion based on the fact that insanitary condition plus a well constituted diet does not produce goiter, but insanitary condition plus a diet of cabbage (which is goitrogenic itself) does produce goiter. On page 206 they conclude from an experiment in which the occurrence of goiter among a batch of only nine pigeons receiving iodine is compared with the occurrence of goiter in a batch of 366 pigeons not receiving iodine that iodine may stimulate the thyroid gland. The book contains many inaccuracies and several misquotations and cannot be recommended either to the statistician or to the student of goiter.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., Professor of Pathology in the University of London, and Lawrence P. Garrod, M.A., M.B., B.Ch., Bacteriologist and Lecturer in Bacteriology, St. Bartholomew's Hospital. Cloth. Price, $3.50. Pp. 392, with 67 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1932.

This volume constitutes a worthy addition to the series of books on recent advances of various phases of medicine. By no means complete, the book includes subjects of importance on which active work and progress are being made. The authors deviate from strict morbid anatomy and dwell on related experimental, physiologic and biochemical observations. The subjects are treated briefly and clearly, particular emphasis being placed on such subjects as the reticulo-endothelial system, experimental cancer research, and cardiovascular, vitamin deficiency and kidney diseases. Important references are included, so that the reader may be guided to more comprehensive work. The tables and illustrations are features that add to the value of this type of book. The book deserves the consideration of the practitioner who is interested in getting in brief form some of the major advances in pathology in recent years.

Notes for Diabetics. By One of Them. With foreword by Harvey Sutton, M.B., Professor of Public Health and Preventive Medicine, University of Sydney. Cloth. Price, 5/-. Pp. 98, with 4 illustrations. Sydney, Australia: Angus & Robertson, Ltd., 1932.

The statement that "inexcusable ignorance kills more diabetics than diabetes" is only an approximation of the truth. But certainly deaths resulting from ignorance of the disease are inexcusable, considering the quantity of literature on the subject now on the market for both the diabetic patient and his physician. Recently many persons with diabetes have edited nontechnical books designed to assist other persons with diabetes in adjusting themselves to the unfamiliar routine of the diabetic life. This book, by an Australian, follows the general plan, being similar to many recent lay publications in the United States. Frequent reference to Joslin of Boston indicates that the author is familiar with this authority. The author seems well informed, is endowed with common sense, and treats his subject with the confidence of experience. In view of the fact that the price of imported books in Australia is increased by taxes to 140 per cent of the original price, this book may meet a local demand.

Medical Electricity for Students. By A. R. I. Browne, Radiographer at the Royal Alexandria Infirmary, Paisley. Third edition. Cloth. Price, $4. Pp. 245, with 88 illustrations. New York: Oxford University Press, 1931.

This is written by a technician for students of physical therapy. Eighty-one pages is devoted to a nonmathematical discussion of the elementary principles of electricity and magnetism and as such offers a condensed and practical introduction to the subject. Part two, of fifty-six pages, describes the make-up and operation of apparatus; the clinical efficacy of some of the devices has been questioned scientifically. The discussion in part three, on electrical treatment, might have a tendency to encourage quackery. For instance, constant cur-

rent is recommended for the absorption of inflammatory products in infantile paralysis and myelitis. It is possible that free-lance technicians might be led astray by the recommendation that constant current will relieve spastic paralysis.

Medicolegal

Relative Liability of Nurse and Physician

(Byrd v. Marion General Hospital (N. C.), 162 S. E. 738)

The plaintiff gave birth to a child on or about January 16. Because she was threatened with convulsions, her physician directed that if they did occur she should be rushed to the Marion General Hospital, to have them "sweated out." The Marion General Hospital was owned by a corporation but was leased to one of the defendants, Dr. Miller, and operated by him on his own account. His wife acted as superintendent of nurses. Convulsions occurred on January 22, and the patient was carried unconscious to the hospital. Her attending physician telephoned the hospital, and on learning that Dr. Miller was out of town, he told Mrs. Miller that he wanted the plaintiff sweated in the sweat box at the hospital and that he would be there soon. Whether he arrived before or after the plaintiff was put into the sweat box or cabinet was later a matter of dispute. He was present, however, during the greater part of the treatment, instructed Mrs. Miller to administer a hypodermic, the character of which is not shown by the record, and after the plaintiff had been in the cabinet thirty minutes, directed that she be allowed to remain there ten minutes more. Mrs. Miller, acting as superintendent of nurses, prepared the patient for the cabinet, administered the hypodermic ordered by the patient's attending physician, and seems to have supervised or performed the nursing duties incident to the treatment. All the plaintiff's clothing was removed, except a light vest, a light gown, and an abdominal binder. As she was unconscious and having convulsions about every five minutes, her hands and feet were tied to prevent her breaking the electric lights in the cabinet and cutting herself, during her struggles when seized with convulsions. A few hours after the plaintiff was removed from the cabinet it was found that she had been burned about the legs and body. Sloughing of tissues followed, with exceedingly serious permanent injury.

The injured patient sued the hospital; the lessee of the hospital, Dr. Miller; and the superintendent of nurses, Mrs. Miller. Because of evidence that the corporation owning the hospital had leased it to Dr. Miller and had no part in its management, no judgment was sought against it. Judgment was given in favor of the plaintiff, and the defendants appealed to the Supreme Court of North Carolina.

In this case, said the Supreme Court, the nurse is charged with liability. Nurses must obey and diligently execute the orders of the physician in charge of a patient, unless the order is so obviously negligent as to lead any reasonable person to anticipate that substantial injury will result from its execution. The physician alone is responsible for diagnosis and treatment. Nurses are not supposed to be experts in the technic of diagnosis or in the mechanics of treatment.

The plaintiff's injuries in this case resulted from one or all of the following factors: (*a*) Her body was improperly wrapped before being exposed to the heat; (*b*) she was suffering from some disease rendering her unusually sensitive to the application of heat; (*c*) she was kept in the cabinet too long. If the injury resulted from a peculiar condition of the patient's body that made her unusually susceptible to heat, it was a matter of diagnosis, which lay exclusively within the province of the physician, unless the condition was so pronounced and so well known as to require a nurse in the exercise of ordinary care to anticipate injury. There was no evidence in the record, however, of any such unusual susceptibility to heat. If the injury resulted from subjecting the patient to the heat of the cabinet too long, the duration of the period was in fact prescribed by the plaintiff's own physician, who was present during the treatment. The only element of the case on which the liability of the nurse and of her principal, the superintendent of the hospital, can be based is that the patient was improperly wrapped or covered before she was placed in the cabinet. Obviously, if a patient is taken to a hospital on a physician's orders, and a nurse undertakes to administer treatment without instructions from the physician, she administers such treatment at her own peril. But if the physician is present and directs, or even stands by approving the treatment administered by the nurse, then the nurse, unless treatment is obviously negligent or dangerous, can assume that the treatment is proper. Under such circumstances the treatment becomes treatment by the physician, not treatment by the nurse. In the present case, the preparation of the patient, even if it was not proper, must nevertheless be regarded as a part of the treatment prescribed by her physician, because he, being fully cognizant of her condition and of all relevant facts and circumstances, stood by without protesting or directing any different course.

There was no evidence that the defendant nurse did not possess the degree of skill which the law requires or that in operating the machine she failed to exercise the degree of care which the law deems essential. There was an abundance of evidence, and none to the contrary, to show that such heat as was generated by the cabinet was usually applied to the nude body and resulted in no harmful consequences. There was nothing to indicate to the defendant nurse that the preparation of the body of the plaintiff with the acquiescence and implied approval of the plaintiff's physician was obviously dangerous or likely to produce harm. There were, therefore, no facts on which liability on the part of the defendant nurse or on the part of her codefendant, the lessee of the hospital, could be predicated. The judgment of the trial court in favor of the plaintiff was therefore reversed.

Wills: Testamentary Capacity as Affected by Cerebral Hemorrhage.—The fact that a testatrix had a cerebral hemorrhage; that her mentality was to some extent weakened and impaired; that she had defective memory; that she was unable, on all occasions, to recognize her acquaintances and friends; and that she manifested indifference as to the character of her speech and conversation, is not sufficient, says the Supreme Court of Iowa, to impeach the validity of her will. Testamentary capacity exists if the testatrix has sufficient mentality to understand the nature and purpose of the instrument she executes, the extent and nature of her property, the distribution she desires to make, and the natural objects of her bounty. Capacity to transact business generally, to make contracts, and to carry on difficult negotiations is not essential to testamentary capacity. Mental weakness due to disease does not deprive one of testamentary capacity unless it has progressed to the extent that the power of intelligent action has been destroyed. Mere forgetfulness and enfeeblement of the body are not alone sufficient to disqualify one from making a will. The disqualification which deprives one of testamentary capacity must exist at the very time of the execution of the will.—*Bishop v. Scharf (Iowa), 241 N. W. 3.*

Society Proceedings

COMING MEETINGS

American Society for the Study of Disorders of Speech, St. Louis, November 25-26. Dr. Samuel D. Robbins, 419 Boylston Street, Boston, Secretary.

American Society of Tropical Medicine, Birmingham, Ala., November 16-18. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Association of American Medical Colleges, Philadelphia, November 14-16. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Los Angeles, December 8-10. Dr. Clarence A. DePuy, 230 Grand Avenue, Oakland, Calif., Secretary.

Porto Rico, Medical Association of, San Juan, December 9-11. Dr. P. Morales Otero, 12 O'Donell Street, San Juan, Secretary.

Radiological Society of North America, Atlantic City, November 28-December 2. Dr. Donald S. Childs, Medical Arts Building, Syracuse, New York, Secretary.

Society of American Bacteriologists, Ann Arbor, Mich., December 28-30. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Medical Association, Birmingham, Ala., November 16-18. Mr. C. P. Loranz, Empire Building, Birmingham, Secretary.

Southern Surgical Association, Miami, Fla., December 13-15. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Surgical Association, Madison, Wis., December 9-10. Dr. Frank R. Teachenor, 306 East Twelfth Street, Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

2: 65-96 (Aug.) 1932

Differential Diagnosis of Rectal Cancer. C. Rosser, Dallas, Texas.—p. 65.
Chronic Arthritis: From Roentgenologist's Standpoint. J. P. Chapman, Birmingham.—p. 70.
Aberrant Endometrium. L. L. Hill, Montgomery.—p. 72.
Tetrachlorethylene in Treatment of Hookworm. M. E. Smith, America.—p. 75.
Acute Mastoiditis: Indications for Operative Treatment. W. H. Anderson, Decatur.—p. 77.

American J. Obstetrics and Gynecology, St. Louis

24: 159-318 (Aug.) 1932

Correlation Between Development of Growth and Symptoms of Carcinomas of Uterine Cervix. H. Schmitz, Chicago.—p. 159.
*Five Year End-Results in Treatment of Cancer of Uterine Cervix at Barnes Hospital. Q. U. Newell, St. Louis.—p. 167.
Modified Aschheim-Zondek Test. P. F. Schneider, Evanston, Ill.—p. 174.
*Observations on Secondary Anemia During Pregnancy. R. D. Mussey, C. H. Watkins and J. C. Kilroe, Rochester, Minn.—p. 179.
*Study of Deaths Following Six Thousand and Twenty-Two Gynecologic Operations. J. P. Greenhill, Chicago.—p. 183.
Postmenopausal Bleeding: Survey of Ninety-Eight Consecutive Cases. A. E. Kanter and A. H. Klawans, Chicago.—p. 192.
Complete Inversion of Uterus and Cervix. L. E. Burch, Nashville, Tenn.—p. 198.
Carcinoma and Sarcoma Coexisting in Same Uterus. G. E. Cowles, Wichita, Kan.—p. 200.
Anaplastic Carcinoma of Body of Uterus: Case. R. A. Reis and M. Cutler, Chicago.—p. 202.
Urinary Tract Changes During Late Pregnancy and Early Puerperium. W. F. Mengert and H. P. Lee, Iowa City.—p. 205.
Acute Anterior Poliomyelitis Complicating Pregnancy. L. S. McGoogan, Omaha.—p. 215.
*Radium Therapy in Uterine Hemorrhages of Benign Origin: Clinical Study of One Hundred and Five Consecutive Cases. L. E. Phaneuf, Boston.—p. 225.
*Toxemias of Pregnancy, with Especial Reference to Liver Function. L. L. Mackenzie, New York.—p. 233.
Struma Ovarii and Intraligamentous Cystic Myoma Exhibited in Same Patient: Report of Case, with Brief Comment on These Rare Neoplasms. J. T. Witherspoon, New Orleans.—p. 240.
Fothergill Operation for Correction of Uterine Prolapse: Report of End-Results. F. H. Maier and W. J. Thudium, Philadelphia.—p. 248.
Study of Fetal Mortality. W. B. Harer, Philadelphia.—p. 254.
Reconstruction of Urethra. J. A. McGlinn, Philadelphia.—p. 262.
Primary Carcinoma of Oviduct: Report of Two Cases. W. S. Smith, Brooklyn.—p. 267.
Observations on Cyclic Pelvic Fluid in Female: Preliminary Report. D. Bissell, New York.—p. 271.
Frequency and Causes of Premature Birth: Report of Two Hundred and Thirty-Eight Cases. D. P. Murphy and J. E. Bowman, Philadelphia.—p. 273.
Use of External Cephalic Version in an Outdoor Maternity Clinic. O. Glassman, New York.—p. 277.
Uteroplacental Apoplexy in Accidental Hemorrhage: Report of Case. J. J. Hilton and J. C. Irwin, Los Angeles.—p. 280.

Cancer of Uterine Cervix.—Newell reports that 27 out of 121 women with cancer of the uterine cervix lived five years or more after treatment (22.3 per cent five-year cures). The first symptom in the great majority of cases was vaginal bleeding. The majority of the patients had bleeding or pain for six months before applying for treatment. The greatest percentage of cures from radium was in older people; the younger the person, the greater the mortality. The greatest number of patients applying for treatment were in clinical class 3. Radium was effective in relieving hemorrhage and discharge in most of the cases.

Secondary Anemia During Pregnancy.—Mussey and his associates present a preliminary report of observations on secondary anemia during pregnancy. This is relatively common and there is a tendency for it to increase as pregnancy progresses. Usually secondary anemia may be classified in two general types, the most common of which is type I. In fact this type of secondary anemia seems to be true anemia of pregnancy, characterized by suppressed activity of bone marrow early in pregnancy and by evidence of hemolysis when the bone marrow becomes more active in the later months. There is a tendency for patients to recover spontaneously after delivery. It seems probable that severe cases of this type of secondary anemia make up a large part of the cases formerly termed "pernicious" or "pernicious-like" anemia. It seems probable that the type II anemia is present prior to pregnancy, grows worse during pregnancy, and persists after delivery. In the authors' experience the use of organotherapeutic preparations such as extracts of bone marrow and powdered fetal liver was not followed by appreciable improvement in a group of patients with this type of anemia. However, the failure to obtain improvement may have been due to insufficient dosage or inability of the patient to take the product. The use of ferric citrate or ferric ammonium citrate in large doses, from 20 to 30 grains (1.3 to 2 Gm.) three times a day, was followed by distinct elevation of hemoglobin in 75 per cent of a small group of cases.

Deaths Following Gynecologic Operations.—Greenhill reports that in a series of 6,022 operations performed in the gynecologic service of the Cook County Hospital there were 213 deaths, an incidence of 3.5 per cent. The mortality rates for the largest groups of operation were as follows: For 747 abdominal supracervical hysterectomies it was 0.8 per cent; for 661 abdominal supracervical hysterectomies with bilateral salpingo-oophorectomies, 8.9 per cent; for 350 abdominal panhysterectomies with removal of both adnexa, 4.3 per cent; for 449 defundations with salpingectomy, 4 per cent; for 201 abdominal panhysterectomies, 5.5 per cent, and for 158 vaginal hysterectomies, 1.9 per cent. The most frequent operative diagnoses in the fatal cases were fibroid uterus, 69; salpingitis and pelvic inflammation, 65; malignant tumor, 31; ovarian cyst, 13, and intestinal obstruction, 11. The commonest causes of death in the fibroid group were peritonitis, 50.8 per cent; embolism, 13 per cent; hemorrhage and shock, 11.6 per cent; myocardial failure, 10.1 per cent, and pneumonia, 7.2 per cent. The chief causes of death for the inflammatory group were peritonitis, 61.5 per cent; hemorrhage and shock, 21.5 per cent; pneumonia, 9.2 per cent, and embolism, 3.1 per cent. The most frequent causes of death for the entire series of 213 cases were: peritonitis and ileus, 48.8 per cent; hemorrhage and shock, 16.4 per cent; embolism, 8.5 per cent; pneumonia, 8.5 per cent; malignant conditions and cachexia, 7.5 per cent, and myocardial failure, 5.2 per cent.

Radium Therapy in Uterine Hemorrhages.—According to Phaneuf, radium employed in suitable doses, in properly selected cases, is a valuable agent in the treatment of uterine hemorrhages of benign origin. It finds its greatest field of usefulness in women near or at the menopause, having severe hemorrhages from uteri showing no gross macroscopic lesions, as in hypertrophy and hyperplasia of the endometrium. It should be used cautiously, to avoid hysterectomy, in the hemorrhages of adolescence, and only after medical, endocrinal and hemostatic treatments have failed. Here minute doses should be employed. The author has never gone above 600 mg. hours in this type of case. Radium should not be used to regulate the menstrual periods and in an attempt to favor pregnancy, because of the risk incurred by the product of conception. It is of value in treating small fibromyomas of the interstitial type, especially in women nearing the menopause. A single application, with an appropriate dose, is sufficient to bring on permanent amenorrhea. These patients may be successfully treated with a small amount of radium (0.05 Gm.) and with a minimum amount of apparatus.

Toxemias of Pregnancy.—Mackenzie studied a series of seventy cases of toxemias of pregnancy from a clinical and a laboratory point of view. The controls consisted of patients having normal pregnancies. Classification was made clinically, and the laboratory observations were then examined. The liver function was studied by means of the nitrogen partition of the blood and by the quantitative determination of the urobilin in the urine. On the basis of his observations the author con-

cludes that the routine chemical examination of the blood and urine is of little value in differentiating the hepatic and nephritic toxemias of pregnancy. Urobilinuria is usually not present to a pathologic degree in nephritic toxemias, but it is generally found in hepatic types. Urobilinuria furnishes a further prognostic aid in differentiating these two types of pregnancy toxemia.

American Journal of Ophthalmology, St. Louis

15: 685-782 (Aug.) 1932

*Concerning Magnetic Intra-Ocular Foreign Bodies and Their Removal. F. H. Verhoeff, Boston.—p. 685.
*Researches on Follicular Diseases of Conjunctiva: Their Relation to Laws of True Trachoma, Its Etiology and Unification of Conception. C. Pascheff, Sofia, Bulgaria.—p. 690.
Various Types of Ophthalmic Lens Corrections. M. Poser, Rochester, N. Y.—p. 709.
The Photoscope in Retinoscopy. J. I. Pascal, Boston.—p. 711.
Two Circle Grid Charts for Measuring Visual Acuity and Astigmatism. E. B. Greene, Ann Arbor, Mich.—p. 716.
Heteroplastic Ossification in Choroid: Report of Two Cases. T. M. Shapira, Chicago.—p. 721.
*Etiology of Phlyctenulosis. M. A. Lasky, Brooklyn.—p. 725.
Cross-Cylinder Tests, Especially in Relation to Astigmatic Axis. W. H. Crisp, Denver.—p. 729.
Study in Tonometric Measurements. P. Shope, Camden, N. J.—p. 739.

Magnetic Intra-Ocular Foreign Bodies.—Verhoeff describes the operative procedures he has found most effective in the removal of magnetic intra-ocular foreign bodies. He prefers the anterior route, as it involves no scleral incision which may lead to separation of the retina.

Follicular Diseases of Conjunctiva.—Pascheff classifies follicular diseases of the conjunctiva as (1) simple follicular conjunctivitis; (2) miliary follicular conjunctivitis, or ophthalmia, and (3) hyperplastic folliculomatous conjunctivitis, or trachoma verum. The clinical and histologic characteristics of each form of the disease are presented, with numerous illustrative case reports. Four laws of trachoma are formulated. 1. There is no trachoma without follicles. 2. The trachoma follicle is a confluent follicle. 3. The folliculoma of trachoma can develop on the conjunctiva as well as on the cornea. 4. True trachoma finally passes into spontaneous cicatrization or hyaline degeneration. The fourth law applies to every lymphadenoid tissue. Numerous parallel cases in families are described showing the hereditary tendency not only of trachoma but of accompanying evidences of lymphatic disturbances. The conclusion is drawn that trachoma is an endogenous, constitutional lymphadenoid disease of the conjunctiva and not an inflammatory lymphocytic infiltration in which follicles are accidental manifestations.

Etiology of Phlyctenulosis.—Correlating the facts that a much higher percentage of persons with phlyctenular disease show positive skin reactions to tuberculin than of persons not so afflicted and that skin-eye allergy may be induced with other organisms, Lasky believes that phlyctenulosis may be produced in tuberculin sensitive individuals by external contact of the eye with tuberculous material. The phlyctenule is somewhat analogous to the Mantoux reaction in that both result from inoculation with tubercle bacillus protein, and both are allergic reactions. Neither would occur if the body had not been sensitized to the tubercle bacillus by previous tuberculous infection that had been successfully overcome by the body's defensive mechanism.

American Journal of Physical Therapy, Chicago

9: 113-140 (Aug.) 1932

Carbon Arc Light in Prevention and Cure of Rickets. A. F. Hess and L. J. Unger, New York.—p. 117.
Dielectrolysis of Pilocarpine: Its Diagnostic Value. M. Giraudeau, Paris, France.—p. 119.
Noncoagulative Shrinkage of Tonsils. T. G. Atkinson, Chicago.—p. 122.
Selecting the Modality According to Law. A. T. Noe, Santa Barbara, Calif.—p. 128.

American Review of Tuberculosis, New York

26: 105-208 (Aug.) 1932

*Bactericidal Action of Ultraviolet Irradiations on Tubercle Bacilli. E. Mayer and M. Dworski, Saranac Lake, N. Y.—p. 105.
*Vitamin Therapy in Pulmonary Tuberculosis: II. Treatment of Pulmonary Tuberculosis by Means of Hypercalcemia Induced by Massive Doses of Activated Ergosterol. P. D. Crimm, Evansville, Ind.—p. 112.
Climatic Treatment of Tuberculosis. E. H. Bruns, Denver.—p. 124.
*Blood Sedimentation Test in Management of Pneumothorax Patient. J. W. Cutler, Philadelphia.—p. 134.
*Clinical Application of Gas Analysis in Artificial Pneumothorax. P. N. Coryllos, H. Konterwitz and E. R. Levine, New York.—p. 153.
Studies on Saprophytic Acid-Fast Bacteria. Harriet Mansfield Thomson, Ithaca, N. Y.—p. 162.
Study of Chemical Changes Accompanying Growth of Tubercle Bacilli (H 37) on Long's Synthetic Medium. Florence E. Hooper, Alice G. Renfrew and T. B. Johnson, New Haven, Conn.—p. 179.
Simplified Egg Medium for Cultivation of Mycobacterium Tuberculosis. W. H. Feldman, Rochester, Minn.—p. 187.
Study of Tuberculosis Contacts in Families. W. S. Barclay, Saskatoon, Sask., Canada.—p. 192.

Bactericidal Action of Ultraviolet Irradiations.—Mayer and Dworski report that a suspension of tubercle bacilli, containing 2,750,000 organisms per cubic centimeter, was killed within four minutes by the absorption of the energy derived from the complete ultraviolet band of a mercury-quartz arc (Kromayer). A like amount of energy destroyed dried tubercle bacilli on the same suspension within four minutes. Tubercle bacilli, fixed by heat and then irradiated for from five to twenty-five minutes, showed changes indicative of disintegration, and irregularities were observed in staining by the Ziehl-Neelsen method.

Vitamin Therapy.—According to Crimm, viosterol with a cod liver oil coefficient of 10,000 increases the absorption of calcium and phosphorus from the intestinal tract. A dosage of 20 drops four times a day, given for a period of five days, produces a hypercalcemia that is compatible with well being. This potency at this dosage and length of administration produces a cumulative effect on the serum-calcium concentration. The cumulative effect is probably due to mobilization of calcium from the osseous system. A brief rise in the phosphorus concentration usually occurs in the beginning, but later a gradual fall accompanies a high calcium concentration. Following the return of the calcium concentration to the proximate normal, a repetition of the same dosage produces hypercalcemia for a longer period. By checking the calcium concentration in the blood serum and observing the earliest symptom of loss of appetite, one may alleviate the disagreeable conditions of calciotoxemia with intravenous injections of sodium bicarbonate. Viosterol increases the calcium and often the phosphorus concentration of the pleural fluid.

Blood Sedimentation in Pneumothorax.—Cutler studied the sedimentation test in a group of 131 patients receiving artificial pneumothorax treatment during the past three and a half years. The purpose in view was to ascertain what help, if any, the physician may expect from the test in the management of such cases. The following observations and deductions were made: 1. The sedimentation test fills a gap in the management of tuberculous patients receiving artificial pneumothorax treatment. It gives valuable information at a time when roentgen changes are obscured and physical signs and symptoms obliterated by the collapse. 2. The sedimentation rate is a sensitive measure of the activity of the tuberculous process in the compressed lung and is the last objective evidence of activity to become normal. A return to normal indicates quiescence of the pathologic process but does not necessarily indicate stability of the lesion. 3. In uneventful cases the sedimentation rate shows steady improvement and changes from a vertical or a diagonal curve, indicating activity of the tuberculous process, to a horizontal line, indicating quiescence, but not until weeks or months after the disappearance of constitutional signs and symptoms. 4. When there is disease in both lungs and the more involved lung has responded to pneumothorax treatment, the sedimentation rate is a simple means to determine the effect of the compression on the less involved side. It will not become normal until the tuberculous process is quiescent in both lungs. 5. During the early part of the treatment the sedimentation test should be repeated at least once a month and afterward every two months. A diagonal line with an index of 15 mm. or more should always be respected. The patient should be warned that the disease is active and that a relapse is possible. Exercise should be prescribed with great caution and its effect studied carefully by means of the sedimentation test, regardless of how well the patient may feel clinically. Adherence to this rule will prevent many a relapse and spread in the opposite lung. 6. The test is simple to perform and to interpret. By its proper utiliza-

tion the physician can gather valuable information out of all proportion to the effort made to obtain it. The author believes that further study should make this one of the most widely used clinical laboratory procedures in phthisiotherapy.

Gas Analysis in Artificial Pneumothorax.—Coryllos and his associates call attention to the fact that serial quantitative gas analyses in artificial pneumothorax render possible the determination of the total amount of gases contained in the pleural cavity and of the variations occurring in it, thus permitting the determination of the absorbing capacity for gases of the pleura in each individual case and of its variations. In oleothorax treatment, histophysiologic changes of the pleural serosa can be detected and followed. Furthermore, the diagnosis of spontaneous pneumothorax can be easily and accurately established and the course of the pleuropulmonary communication can be followed. A simplified gas analysis apparatus has been devised for that purpose, sufficiently accurate for clinical purposes, allowing the bedside use of this method.

Annals of Surgery, Philadelphia

96: 161-320 (Aug.) 1932

*Penetrating Wounds of Abdomen: Report of Sixty-Three Cases Received from Pistol, Rifle and Shotgun Missiles. B. C. Willis, Rocky Mount, N. C.—p. 161.
*Influence of Hemorrhage in Abdominal Gunshot Injuries. F. L. Loria, New Orleans.—p. 169.
Partial and Total Devascularization of Stomach. B. M. Bernheim, Baltimore.—p. 179.
*Vagus Nerve and Its Relation to Peptic Ulcer. R. R. Best, Omaha, and V. Orator, Duesseldorf, Germany.—p. 184.
Recurrent Perforation of Peptic Ulcers. H. E. Pearse, Jr., Rochester, N. Y.—p. 192.
Resection of Fundus of Stomach for Peptic Ulcer. F. G. Connell, Oshkosh, Wis.—p. 200.
*Peptic Ulcer in Infants Under One Year of Age. J. Selinger, New York.—p. 204.
Partial Gastrectomy for Lymphosarcoma in Childhood. V. C. Hunt, Los Angeles.—p. 210.
Pseudomyxoma Peritonei. J. W. Jeffries, Philadelphia.—p. 215.
*Chronic Obstruction of Duodenum Caused by Enlarged Retroperitoneal Glands. R. M. Penick, Jr., Baltimore.—p. 219.
Gravity Feeding by Jejunostomy. J. D. Stewart, Boston.—p. 225.
Perforated Peptic Ulcer of Meckel's Diverticulum. R. T. Vaughan and H. A. Singer, Chicago.—p. 230.
Benign Tumors of Stomach. G. P. LaRoque and E. L. Shiflett, Richmond, Va.—p. 240.
Advanced Gastrojejunal Ulcer. W. L. Estes, Jr., Bethlehem, Pa.—p. 250.
Choice of Surgical Procedures for Duodenal Ulcer. W. Walters, Rochester, Minn.—p. 258.
Tumors of Small Intestine. H. W. Cave, New York.—p. 269.
Late Results in Operative Treatment of Carcinoma of Breast. P. Klingenstein, New York.—p. 286.
Perimesenteric Intra-Abdominal Hernia. A. M. Smith, Cleveland.—p. 292.

Penetrating Wounds of Abdomen.—Willis calls particular attention to the inadvisability of operating on shotgun wounds when small birdshot have scattered throughout the abdomen, as it is hopeless and useless to try to locate all the perforations. These perforations are small and there is no discharge of mucosa through the openings. The patients should be put to bed with the head of the bed elevated at a 10 to 15 degree angle; nothing by mouth; morphine sufficient to keep them quiet; hypodermoclysis of saline solution or intravenous 5 per cent dextrose with proper sterilization and dressing of the external abdominal wound. Tetanus and perfringens serums should be given and a watchful waiting policy followed. If these patients are operated on, the surgeon will succeed only in milking the infection through the holes in the intestine, greatly shocking the patient, and these efforts will be rewarded by a general peritonitis and death.

Abdominal Gunshot Injuries.—Loria reports that the New Orleans Charity Hospital statistics on penetrating abdominal gunshot injuries show 1,299 cases as having been treated at this institution in the thirty-two years from 1900 through 1931 with a gross mortality of 62.3 per cent. He carefully observed and studied a series of 153 cases of penetrating abdominal gunshot wounds, 137 of which are from the Charity Hospital. The causes of death in this series are given. Hemorrhage and shock headed the list, having accounted for 55 per cent of the fatalities, while general peritonitis accounted for 34 per cent of the deaths. Only 11 per cent died of other causes in this series. Hemorrhage as a rule accounts for most of the shock seen in these cases, the depth of shock being directly proportional to the quantity of blood lost by the victim. The mortality increases proportionately with the amount of hemorrhage. Patients losing less blood have a considerably better chance for recovery. The author considers that transfusions are of indispensable value, second in importance only to operative intervention as a therapeutic measure in these cases. Only sixteen of the 142 patients receiving hospital treatment in this series were given transfusions. The mortality among them was 50 per cent.

Vagus Nerve and Peptic Ulcer.—Best and Orator describe experiments in which they demonstrated that lesions of the stomach do not result in organic changes of the vagi and medulla oblongata through a direct neurolymphatic connection. Direct continued irritation of the vagus with a known irritant such as magnesium does not produce acute or chronic gastric or duodenal ulcer and does not prolong healing. This is supportive evidence that section of the vagus nerves for the treatment of peptic ulcer will prove to be of little value.

Peptic Ulcer in Infants.—According to Selinger, duodenal and gastric ulcers—particularly gastric—in infants under 1 year of age occur much more frequently than is generally supposed, at least in 1.8 per cent of cases. With more necropsies and a closer inspection of the viscera involved, this percentage would undoubtedly be greatly increased. They practically always occur in infants who have some constitutional disease—particularly marasmus. Traumatism and infection are perhaps secondary causes. Except in rare cases, the diagnosis is never made until perforation or persistent and massive hemorrhage occurs. The treatment is early surgical intervention.

Chronic Obstruction of Duodenum.—Penick calls attention to the fact that duodenal obstruction due to the presence of enlarged, calcified retroperitoneal lymph nodes has received little attention in the literature on this subject. He reports two such cases. In both instances the obstruction and resulting dilatation were revealed by roentgen examination and confirmed at operation. Gastroduodenojejunostomy was done in one case and an anterior gastro-enterostomy in the other. One patient developed a subsequent obstruction in the jejunum below the site of anastomosis which was due to adhesions between the intestine and the mass of lymph nodes. Although the enlargement and calcification of the retroperitoneal lymph nodes were thought to be due to a tuberculous process, this was not confirmed by microscopic examination of the tissue removed or by the presence of active tuberculosis elsewhere. However, the presence of calcified pulmonary nodules in one case lends weight to this assumption.

Archives of Neurology and Psychiatry, Chicago

28: 251-482 (Aug.) 1932

Corticonuclear Tracts for Associated Ocular Movements. W. G. Spiller, Philadelphia.—p. 251.
*Nerve Degeneration in Poliomyelitis: IV. Physiologic and Histologic Studies on Roots and Nerves Supplying Paralyzed Extremities of Monkeys During Acute Poliomyelitis. J. L. O'Leary, P. Heinbecker and G. H. Bishop, St. Louis.—p. 272.
*Diagnosis of Intracranial Tumors by Supravital Technic: Further Studies. Louise Eisenhardt, Boston.—p. 299.
Central Nervous System in Acute Phosphorus Poisoning. F. Wertham, New York.—p. 320.
Action Current Studies of Simultaneously Active Disparate Fields of Central Nervous System of Rat. L. E. Travis, Iowa City, and J. M. Dorsey, Ann Arbor, Mich.—p. 331.
Cranial Hyperostosis Associated with Overlying Fibroblastoma. B. J. Alpers and R. Harrow, Philadelphia.—p. 339.
Cholesterol Content of Blood in Epilepsy and Feeblemindedness. H. Gray, San Francisco, and L. C. McGee, Dallas, Texas.—p. 357.
*Extramural Patients with Epilepsy, with Especial Reference to Frequent Absence of Deterioration. H. A. Paskind, Chicago.—p. 370.
*Thyroid Factor in Family Periodic Paralysis: Report of Case. S. Morrison and M. Levy, Baltimore.—p. 386.
Familial Progressive Bulbar Paralysis. H. W. Lovell, Ann Arbor, Mich.—p. 394.
Lecithin and Cholesterol in Cerebrospinal Syphilis Including Dementia Paralytica and Tabes. I. Rosen, Frances Krasnow and J. Notkin, New York.—p. 399.
Calcium Content of Brain and Its Distribution in Various Regions During Diallylbarbituric Acid Narcosis: Experimental Study. S. Katzenelbogen, Baltimore.—p. 405.

Nerve Degeneration in Poliomyelitis.—Peripheral nerves and spinal roots from the affected cord segments of thirty monkeys killed at intervals subsequent to the appearance of

paralysis were studied by O'Leary and his associates by physiologic and histologic methods. The changes are compared with those that occur following the severing of typical normal peripheral nerves, and also with the extent and severity of the lesions within the cord. In poliomyelitis, conduction through the diseased anterior horn cells ceases before changes in the motor roots and peripheral nerves become apparent. In general, this period is significantly longer than that which elapses before changes are manifest in nerve trunks severed from their cells of origin. It varies with the degree of immediate cell destruction produced by the virus. In only one respect were physiologic changes unlike those found in severed peripheral nerves observed in the affected trunks. The discovery of increase in conduction rate and of shorter refractory periods indicates an increase in irritability of fibers during the preparalytic stage and the first days of paralysis. The bearing of this evidence on the theory of axonal transmission of virus is discussed. The action potential of the small, myelinated (visceral) fibers of the motor roots of disease segments is depressed along with that of the large, myelinated variety. Pronounced sensory changes are the exceptional observation following intracerebral inoculation, although histologic evidence of degeneration is to be found in all roots studied. The fibers degenerating may be so infrequent that depression in the action potential of sensory roots cannot be detected.

Intracranial Tumors: Diagnosis.—In further illustration of the supravital method for the differential diagnosis of intracranial tumors, Eisenhardt gives ten examples, together with the clinical records of the patients. Attention is drawn not only to the fact that an immediate diagnosis of the predominating cytology of the lesion may be provided during the course of the operation, but also to the extraordinary difference between the appearance of the cells thus studied and those which pathologists are accustomed to see after tumor fixation.

Extramural Patients with Epilepsy. — Paskind calls attention to the fact that almost all the descriptions of epilepsy have been written by physicians in institutions on studies of institutional patients. Since epileptic patients are sent to institutions largely because mental changes develop, these writers state that mental changes occur in an overwhelming percentage of epileptic patients; some say that all persons with epilepsy deteriorate. These writers, however, did not know of the existence of a large number of persons with epilepsy who adjust and succeed outside an institution and who do not deteriorate. A study of 304 patients in private practice who had had epilepsy for over six years, and in some instances for two, three or four decades, revealed that only twenty, or 6.5 per cent, had become deteriorated; the rest carried on in the world the same as their fellow men. A further study of the nondeteriorated patients showed that they differed in several respects from the deteriorated ones. They came of a stock less heavily burdened with neuropathy; the onset in the nondeteriorated patients was on the whole somewhat later; they had attacks less frequently, and they had more and longer remissions.

Thyroid Factor in Paralysis.—Morrison and Levy present a case in which exophthalmic goiter and periodic attacks of paralysis coexisted. Treatment for the diseased thyroid resulted in partial alleviation of the paralytic attacks. The authors do not believe that thyroid disease in itself is the etiologic agent in periodic paralysis, but they suggest that the latter disease appears as the result of a polyglandular disturbance. It may be that periodic paralysis, or, more correctly, family periodic paralysis, is not an entity. There may be several types with different etiology, all characterized, when typical, by heredity, periodicity, confinement to the motor portion of the nervous system, electrical changes and practically perfect health of the patient in the free intervals. It does seem, however, that in a certain group of cases the endocrine element plays an indisputable part, which is doubtless of etiologic importance. It offers, therefore, a method of more or less hopeful treatment for a disease which heretofore was allowed, unchecked, to run its chronic course. Rest, diet and the usual symptomatic measures may be aided immeasurably in certain cases by iodine therapy, subtotal thyroidectomy and other therapeutic endocrine procedures.

Archives of Ophthalmology, Chicago

8: 157-320 (Aug.) 1932

*Somaticovisceral Functional Disorders from Eye Stress. E. L. Jones, Cumberland, Md.—p. 157.
Chemistry of Lens: I. Composition of Albuminoid and Alpha Crystallin. A. C. Krause, Baltimore.—p. 166.
*Pathogenesis of Retinitis Pigmentosa, with Note on Phagocytic Activity of Müller's Fibers. J. S. Friedenwald and E. Chan, Baltimore.—p. 173.
Histologic Changes in Eye Eight Years After Sclerocautery Puncture for Separation of Retina. T. L. Terry, Boston.—p. 182.
*Significance of Choroidal Hemorrhage. A. J. Bedell, Albany, N. Y.—p. 186.
Acquired Cyst of Optic Disk. J. Levine, New York.—p. 209.
Elephantiasis of Eyelid. M. N. Beigelman, Los Angeles.—p. 218.
Metastatic Carcinoma of Optic Disk: Report of Case. W. T. Davis, Washington, D. C.—p. 226.
Wound Closure for Intracapsular Extraction of Cataract. O. R. Wolfe and J. McLeod, Marshalltown, Iowa.—p. 238.
Tularemia: Some Pathologic and Clinical Manifestations, with Report of Two Cases. Bertha Klien-Moncreiff and G. Bernice Rhodes, Chicago.—p. 245.
Foreign Proteins and Gold in Treatment of Uveitis. W. L. Benedict and W. H. Goeckerman, Rochester, Minn.—p. 250.
Surgery of Orbit. G. de Takáts, Chicago.—p. 259.

Disorders from Eye Stress.—According to Jones, timidity, lack of self confidence and senseless crying in children and some women with morbid fears as of sudden death are often due to the depressant effects of eye stress and are relieved by proper cycloplegic correction, which may change the patient's whole course of life to a higher plane. In his belief, such cases explain many of those which psychiatrists classify as "anxiety neuroses," manifested by psychic conflicts, touchiness, irritability, sensitiveness, fear of death, and so on. By absolutely exact correction of astigmatism, the glasses being worn constantly, one can get results impossible of attainment by corrections that may give the best vision but do not relieve the stress.

Pathogenesis of Retinitis Pigmentosa.—Friedenwald and Chan state that the presence of melanin granules in the retina causes a destruction of the retinal neurons and a proliferation of Müller's fiber cells. The retinal ganglion cells and the rods and cones seem to be more easily injured by this agency than the bipolar cells. The direct cause of the injury seems to be the disorganization of the retinal structure produced by the migration through the retina of wandering cells laden with pigment granules. All the histologic changes in the retina in retinitis pigmentosa can be accounted for on the hypothesis of a primary lesion to the retinal neuro-epithelium with secondary long-continued infiltration of the retina by melanin granules. Müller's fiber cells are capable of active phagocytosis.

Choroidal Hemorrhage.—Bedell divides the significance of choroidal hemorrhage into several groups of clinical conditions: what it means after an injury, when it is spontaneous, when concomitant with choroidal inflammation, when present in myopic elongation of the eyeball, as a causative factor in the destruction of eyes following intra-ocular operations, when an integral part of arteriosclerosis, of hypertension, of diabetes and the various blood dyscrasias, as well as when it makes its rare appearance in the papilledema of brain tumor. After a trauma, it means a rupture of the choroid, which may or may not involve the macula. When spontaneous, it is a grave symptom whether in arteriosclerosis, hypertension, diabetes, blood dyscrasis such as pernicious anemia and leukemia or without demonstrable cause. The more centrally the lesion is placed, the more destructive of function. Even a small choroidal hemorrhage may be the forerunner of an expanding ring of blood, and the author has seen it as the first sign of a rapidly advancing vascular death. In practically all types and cases of choroiditis, some choroidal blood is present during the course of the disease. Old hemorrhages disappear, and new ones develop near the border of the spreading lesion. Hemorrhage in the macular choroid of myopic persons always reduces vision and is evidence of choroidal stretching. When the eye bleeds profusely, after an intra-ocular operation, the probability that the blood comes from the choroid is sufficient to give one great concern. When discovered in the routine examination of the fundus in brain tumor, choroidal hemorrhage seems to be devoid of significance, although even here when it involves the macular region destruction assumes an important rôle.

And finally, when choroidal hemorrhage breaks through the retina and into the vitreous, it is an indication of a large extravasation, which in the author's experience is either of traumatic or of circulatory origin.

Archives of Pathology, Chicago

14: 137-294 (Aug.) 1932

*Calcification of Myocardium in Premature Infants. M. Diamond, Chicago.—p. 137.
*Acute Pyemic Cholecystitis: Report of Case. K. Terplan and S. Sanes, Buffalo.—p. 146.
*Vascular Lesions of Gastro-Intestinal Tract in Mercury Poisoning. J. R. Schenken and G. H. Hansmann, Iowa City.—p. 152.
*Experimental Pathology of Liver: VIII. Effects of Carbon Tetrachloride on Normal and on Restored Liver After Partial Hepatectomy. A. M. Lacquet, Rochester, Minn.—p. 164.
*Morphology of Inflammatory Defense Reactions in Leukemia. R. H. Jaffé, Chicago.—p. 177.
*Metabolism in Acute Molecular Degeneration of Striated Muscle: III. Variations Produced in Glycogen, Lactic Acid and Phosphorus of Muscle. D. K. Fishback and H. R. Fishback, Chicago.—p. 204.

Calcification of Myocardium in Premature Infant.—In a 28 weeks premature infant that lived for thirty minutes after birth, Diamond found extensive calcification of the myocardium, which he explains as secondary to toxic degeneration of the muscle fibers. A review of the literature shows that calcification of the myocardium is secondary to preceding degeneration or necrosis of the muscle fibers. This degeneration may be due to vascular, inflammatory or toxic conditions. Fatty degeneration does not play any part in calcification of the muscle fibers.

Acute Pyemic Cholecystitis.—Terplan and Sanes report the clinical record and pathologic observations in an unusual case of advanced acute pyemic cholecystitis with multiple embolic lesions in the wall of the gallbladder, which occurred during staphylococcic pyemia arising from acute osteomyelitis of the lumbar vertebrae. No similar observation appears in the literature. Grossly, the internal surface of the gallbladder showed superficial erosions and ulcers; externally, without a gross perforation, the formation of acute pericholecystitis and right subdiaphragmatic abscess had taken place. No real abscesses were found in the wall of the gallbladder. Histologically, the lesions observed in the wall were best characterized as acute infarctions from bacterial emboli. Clinically, the symptoms referable to the pathologic changes in the gallbladder tended to obscure all other manifestations of the primary disease with which the patient, an elderly diabetic woman, was suffering.

Vascular Lesions of Gastro-Intestinal Tract in Mercury Poisoning.—Schenken and Hansmann describe three cases of a peculiar type of mercury poisoning. The lesions were primarily vascular. A limited portion of the gastro-intestinal tract was involved in each case. The same part of the intestinal tract was not involved in any two of the cases. Stomatitis or nephritis was not noted. The peripheral action of mercury on the vasomotor mechanism and the corrosive action of ionizable mercury compounds, as is pointed out in the literature on experimental mercury poisoning, are sufficient, with the additions of the action of mercury as a foreign body and the unavoidable secondary infection, to account for the lesions found. The authors believe that chronic intestinal obstruction with evidence of perforation should prompt one to consider the possibility of mercury poisoning. A postmortem examination that shows primary vascular injury to a limited portion of the gastro-intestinal tract should suggest mercury poisoning as a possible cause until it can be excluded by careful chemical analysis for mercury.

Experimental Pathology of Liver.—Lacquet presents the results of an investigation to determine whether the properties of the restored liver after partial removal were different from those of the normal organ. The effect of carbon tetrachloride on the restored liver was compared with its effect on the normal organ. It was found that when a single administration of 0.25 cc. of carbon tetrachloride was given by stomach tube to a normal rat, weighing from 150 to 200 Gm., central necrosis and fatty degeneration of the liver ensued. The maximal lesion was reached after twenty-four hours, and the liver was completely regenerated after two weeks. Repeated injections, however, induced typical cirrhosis. From the standpoint of the effects of carbon tetrachloride following partial removal of the liver, three conclusions were apparent: 1. When chemical injury preceded partial hepatectomy, recovery was greatly retarded. 2. When chemical injury was induced from two to four weeks following partial removal, the lesion was far less marked and recovery ensued far more rapidly than in the normal liver following administration of the drug; the restored liver appeared to be considerably resistant to the toxic influence of the drug. 3. When chemical injury was induced two months after partial removal, the extent of the lesion was more or less identical with that in a normal liver following administration of carbon tetrachloride.

Defense Reactions in Leukemia.—Jaffé gives the histologic pictures of the inflammatory defense reactions in ten cases of leukemia. It was shown that the type of response depends on the presence of myeloid tissue able to produce mature granulocytes. In the presence of such tissue, the leukemic patient reacts to an infection like a normal person, while in the absence of such tissue the leukemic cells are not able to compensate, and the alternative changes predominate as they do in agranulocythemia and aplastic anemia. It seems that for the leukemic organism von Möllendorff's conception of the myelopoietic potencies of the fibrocyte holds true.

Metabolism in Acute Molecular Degeneration of Striated Muscle.—The Fishbacks report that a uniform acute molecular degeneration of muscles produced in rabbits was associated with alteration of the muscle metabolites. Muscle glycogen dropped consistently from a control value of 567 to an injury average of 104 mg. per hundred grams. There was a marked rise of lactic acid from the control average of 17.3 mg. to 64.6 mg. per hundred grams. Phosphocreatine decreased from the control average of 68 mg. to 7 mg. per hundred grams. Inorganic phosphorus varied slightly and irregularly from the control value, with a slight tendency toward increase.

Arkansas Medical Society Journal, Little Rock

29: 51-64 (July) 1932

The Cancer Problem. J. M. Martin, Dallas, Texas.—p. 51.
Syphilitic Bursopathy of Verneuil. D. W. Goldstein, Fort Smith.—p. 56.

29: 65-83 (Aug.) 1932

President's Address Before the Auxiliary of the Arkansas Medical Society, April 6, 1932. D. A. Rhinehart, Little Rock.—p. 65.
Headache in Relation to Eye, Ear, Nose and Throat. Grace Tankersley, Pine Bluff.—p. 67.
Treatment of Craniocerebral Injuries. A. F. Hoge, Fort Smith.—p. 73.

Canadian Medical Association Journal, Montreal

27: 117-226 (Aug.) 1932

William Osler: Men and Institutions with Which He Was Associated in Philadelphia. F. R. Packard, Philadelphia.—p. 117.
Thorotrast: New Contrast Medium for Radiologic Diagnosis. W. H. Dickson, Toronto.—p. 125.
*Experimental Intravenous Administration of Colloidal Thorium Dioxide. D. A. Irwin, Toronto.—p. 130.
Use of Thorium Dioxide as Aid to Clinical Diagnosis. I. G. Macdonald, Toronto.—p. 136.
Experiences in Pulmonary Lobectomy. N. S. Shenstone and R. M. Janes, Toronto.—p. 138.
Simple Goiter: Incidence of Thyroid Enlargement in Winnipeg School Children. A. C. Abbott, Winnipeg.—p. 146.
Method for Removal of Cervix in Classic Hysterectomy. C. M. Carruthers, Sarnia, Ont.—p. 152.
Studies in Cholesterol Metabolism: III. Cholesterol and Gallbladder Disease. J. M. McEachern and C. R. Gilmour, Winnipeg.—p. 153.
Blood Groups in Clinical Investigation. F. N. Walker, Toronto.—p. 157.
Oleothorax Treatment of Purulent Tuberculous Effusions: Report of Twenty Cases. D. A. Carmichael, Ottawa, Ont.—p. 160.
Influenzal Meningitis. A. P. Hart, Toronto.—p. 163.
Some Differences in Action of Ephedrine and Epinephrine (Adrenalin, and so on) on Nasal Turbinate Mucosa. H. H. Burnham, Toronto.—p. 168.
Necessity for Early Treatment of Strabismus. W. W. Wright, Toronto.—p. 170.

Colloidal Thorium Dioxide.—Irwin reports that a 25 per cent colloidal solution of thorium dioxide when injected intravenously into rabbits circulated for about five minutes in the colloidal state and then flocculated. The flocculated particles were engulfed, for the most part, by the reticulo-endothelial cells of liver, spleen, lymphatic tissue and bone marrow and by the parenchymatous cells of the liver. A moderate amount was lying free in the reticulum of the spleen and lymph nodes. A relatively small amount was picked up by the suprarenal and ovary. The thorium dioxide in a finely divided state in

the liver and spleen absorbed many of the roentgen rays that usually penetrated these organs, resulting in a shadow which permitted their visualization. The shadow cast by the bone marrow was obscured by the covering bone. In large doses the lymph nodes could be visualized. The suprarenal and ovary contained relatively so little thorium dioxide that the dosage required for visualization would necessarily be tremendous and not practical. The presence of thorium dioxide was innocuous in the tissues and no untoward reaction due to its presence has been observed in doses up to 5 cc. per kilogram during a period of four months. No evidence of elimination of thorium dioxide from the spleen, bone marrow, lymph nodes or ovary was observed in a period of four months. There was evidence that the thorium laden cells of the suprarenal were passed slowly into the suprarenal vein and probably were later caught in the lung capillaries. The thorium dioxide of the liver cells gradually accumulated in the Kupffer cells, which migrated to the central vein area, passed into the blood stream, and through the right heart reached the lungs, where they stuck in the capillaries and eventually were cast off in the bronchial mucus.

Journal of Bacteriology, Baltimore

23: 429-506 (June) 1932

Germicidal Activity of Vapors from Irradiated Oils. R. S. Harris, J. W. M. Bunker and N. A. Milas.—p. 429.
Growth Requirement of Staphylococci. T. P. Huges, Boston.—p. 437.
New Disease in Young Rabbits, Infectious Tympanitis. Z. Morcos, Cairo, Egypt.—p. 449.
Agglutination and Dissociation Studies with Lactobacilli. M. F. Upton and N. Kopeloff, New York.—p. 455.
Interpretation of Direct Differential Counts of Colon-Aerogenes Organisms in Well Waters. F. O. Tonney and R. E. Noble, Chicago. —p. 473.
Electrophoretic Potential of Rhizobium Meliloti. R. P. Tittsler, M. W. Lisse and R. L. Ferguson, State College, Pa.—p. 481.

Journal of Comparative Psychology, Baltimore

13: 313-456 (June) 1932

Comparative Behavior of Primates: I. Delayed Reaction Tests on Primates from Lemur to Orang-Outan. H. F. Harlow, H. Uehling and A. H. Maslow.—p. 313.
Inheritance of Song in Birds. H. C. Sanborn, Nashville, Tenn.—p. 345.
Maze Performance of White Rat in Relation to Unfavorable Salt Mixture and Vitamin B Deficiency. M. F. Fritz, Iowa City.—p. 365.
Multiple Visual Discrimination in Block Elevated Maze. W. Dennis, Richmond, Va.—p. 391.
Field Study of Homing in Pigeons. R. H. Gundlach, Seattle.—p. 397.
Relation of Hunger and Activity Drives in Maze Running by Mice to Factor of Habituation: II. M. F. Washburn and Marjorie Broer, Poughkeepsie, N. Y.—p. 403.
Relation of Performance to Age and Nutritive Condition in White Rat. J. E. Anderson, Minneapolis, and A. H. Smith, New Haven, Conn. —p. 409.
Rôle of Kinesthesis in Retention by Rats. R. M. Dorcus and W. L. Gray, Baltimore.—p. 447.

Journal of Lab. and Clinical Medicine, St. Louis

17: 1071-1184 (Aug.) 1932

*Analysis of Blood Picture in One Hundred Cases of Malignancy. M. Morrison, Brooklyn.—p. 1071.
Acid Response of Stomach to Test Meals of Protein, Fat and Carbohydrate. W. H. Barrow, San Diego, Calif.—p. 1094.
Leukocytes in Surgical Conditions: Study of Two Hundred and Seventy-Five Cases. H. P. Miller, Rock Island, Ill.—p. 1100.
Competency of Rehfuss Tube as Complete Evacuator. E. F. Sievers and J. E. Cook, St. Louis.—p. 1120.

Blood Picture in Malignant Tumor.—On the basis of an analysis of the blood picture in 100 cases of malignant tumor, Morrison states that the diagnosis of this condition may be suspected or corroborated hematologically, not by any one particular observation but by a combination of observations, a constellation of hematologic facts, as it were. The bleeding time is only rarely prolonged, usually less than one minute. The coagulation time is within normal limits. The platelets are normal or increased. An increase explains the frequent occurrence of nonmalignant thrombosis in malignant tumors. The tourniquet test is rarely positive. The fragility test shows no significant changes. Leukocytosis is present in approximately two thirds of the cases and is associated with asegmentopenia. In 85 per cent of the cases presenting leukocytosis, 43 per cent of these are associated with neutrophilia. Of the latter, 95 per cent are associated with an aneosinopenia. Asegmentopenia and aneosinopenia, therefore, go hand in hand. The red cells show a slightly lowered count in two thirds of the cases, a markedly lowered count in one eighth, and normal or increased values in one fifth. There is never a count of less than one million in the absence of hemorrhage. Changes in red cell morphology are conspicuous by their absence, the most frequent observation being anochromasia (52 per cent of the cases). The least frequent changes are macrocytosis, normoblastemia and polychromasia. No matter how complete the evidence of a malignant condition may be on hematologic grounds, a most important factor in diagnosis still remains; that is, the clinical picture, as determined by the history and physical examination of the patient. Experience teaches that the blood picture of malignant tumor may be simulated in other conditions, such as Hodgkin's disease, severe diabetes and diabetic coma, severe nephritis or incipient uremia, cardiac decompensation and cardiac asthma. A practical point worthy of note is the fact that a leukopenia is associated with metastasis in over half the cases. Thus in a case of malignant tumor in which operative intervention is being considered, a leukopenia favors metastasis and the patient may therefore be spared unnecessary surgical intervention, or the burden of roentgen or radium therapy.

Journal of Nervous and Mental Disease, New York

76: 105-208 (Aug.) 1932

Dental Irritation as Defense Phenomena. P. Getson, Philadelphia. —p. 105.
"Divinity" in Semen. T. Schroeder.—p. 110.
State Welfare Versus County Welfare. F. J. Farnell, Providence, R. I.—p. 128.
Tactile Imagination and Tactile After-Effects. W. Bromberg and P. Schilder, New York.—p. 133.

Laryngoscope, St. Louis

42: 579-660 (Aug.) 1932

Surgical Treatment of Facial Palsy: Ballance-Duel Method. A. B. Duel, New York.—p. 579.
Zones of Skull of Maximal and Minimal Sound Propagation: Hearing Through the Skull and Hearing Through the Telephone. B. M. Becker, Brooklyn.—p. 588.
Treatment of Chronic Middle Ear Infection. J. A. Babbitt, Philadelphia. —p. 594.
*Oral Immunization Against Pneumococcus Meningitis. J. A. Kolmer and K. W. Amano, Philadelphia.—p. 610.
End-Results in Sinus Surgery. E. R. Faulkner, New York.—p. 614.
Diseased Inoperable Tonsils Eradicated with Radium: Report of Three Cases. J. C. Scal, New York.—p. 620.
*Hypertrophy of Lingual Tonsil and Lymphoid Tissue of Pharynx: Reduction by Electrocoagulation. A. R. Hollender, Chicago.—p. 622.
*Bronchial Obstruction in Infancy. D. M. Lierle, Iowa City.—p. 627.
Syndrome of Cavernous Sinus Thrombosis Due to Venous Congestion of Right Cerebral Hemisphere. T. E. Beyer, Denver.—p. 632.
Severe Nasal Hemorrhage Due to Infarction of Middle Turbinate: Case Report. S. Bricker, Philadelphia.—p. 635.

Immunization in Meningitis.—In a previous article, Kolmer and Amano reported the results of experiments on the vaccination of rabbits against pneumococcic and streptococcic meningitis produced by intratympanal and intracisternal inoculation with highly virulent organisms. On the basis of the encouraging results observed, and especially in active immunization against pneumococcic meningitis, they suggested the possibility of actively immunizing human beings against pneumococcic and streptococcic meningitis secondary to paranasal or otitic disease, by the preoperative administration of autogenous vaccines. As especially encouraging results were observed by the oral administration of vaccines of the type I pneumococcus, they conducted additional experiments with virulent types I, II and III, and the results, which they briefly record, indicate that a high degree of resistance may be produced in rabbits against pneumococcic meningitis by the oral administration of vaccines of virulent cultures of these types prepared by various methods. Particularly encouraging results were observed with hydrochloric acid-killed, sodium taurocholate-dissolved and heat-killed milk cultures of virulent pneumococci. The authors recommend that, when time permits, human beings with pneumococcic paranasal sinusitis and otitis be prepared for operative procedures by the oral immunization of autogenous vaccines as a possible protection against extension of the infection to the meninges.

Electrocoagulation of Tonsil.—Hollender points out that hypertrophy of the lingual tonsil and of the lymphoid tissue of the posterior wall and lateral folds of the pharynx occasionally

require active treatment. When the hypertrophy is not marked, removal of the local cause, or elimination of the systemic factors, produces amelioration of the symptoms. In the more advanced cases, however, in addition to such other measures as may be indicated, reduction or destruction of the lymphoid masses is indicated. For either purpose the electrocoagulation puncture method is an improvement over the cautery electrode.

Bronchial Obstruction in Infancy.—Lierle believes that infants and young children with stationary or progressive chronic pneumonia should have bronchoscopic examination, particularly when there is evidence of atelectasis or emphysema. Continued infection, or a foreign body in the bronchi, may cause reaction with swelling and accumulation of granulation tissue. In infants and young children a very small tumor and surrounding inflammation may completely occlude a bronchus. There is a tendency for these inflammatory masses to increase and decrease spontaneously in size. Careful history and physical examinations should augment the bronchoscopic examinations to diagnose and remedy the condition accurately. Pressure from tuberculous lymph nodes must always be kept in mind and ruled out whenever possible. Neoplasms and congenital anomalies causing obstruction in the bronchi of infants are rare.

Medical Annals of District of Columbia, Washington

1: 107-148 (May) 1932

Surgery of Autonomic Nervous System. H. H. Kerr, Washington.—p. 107.
Treatment of Prostatism by Endoscopic Revision. R. M. LeComte, Washington.—p. 110.
Principles of Treatment of Strabismus. J. H. Dunnington, New York.—p. 115.
Place of Roentgenology in Obstetrics. P. Willson, Washington.—p. 118.
Empyema in a New-Born Infant Diagnosed During Life. J. W. Lindsay, E. C. Rice and M. A. Selinger, Washington.—p. 120.
Subcutaneous Interstitial Emphysema During Anesthesia: Report of Case. X. C. Suraci, Washington.—p. 122.
Sulphur and Cystine in Vital Activities. M. X. Sullivan, Washington.—p. 125.

New England Journal of Medicine, Boston

207: 245-286 (Aug. 11) 1932

Relation of Diabetes Mellitus and Cholelithiasis: Chemical and Roentgen-Ray Analysis of Calculi. Hazel M. Hunt, Boston, and J. S. de Frates, New Brunswick, N. J.—p. 245.
Preventable Child Deaths: Acute Appendicitis. H. W. Hundson, Jr., Boston.—p. 255.
Observations on Pentobarbital Sodium in Lumbar Punctures, Convulsive and Manic States. S. H. Epstein and F. W. Marvin, Boston.—p. 258.
Anthrax, an Industrial Hazard: Report on Surgical Treatment of Malignant Pustule. S. C. Tucker, Peabody, Mass.—p. 260.
The Three-Year Health Education Study in Lynn English High School. E. Stephens, Lynn, Mass.—p. 263.
What Contribution May Local Health Organization Render Junior High School in Developing Health Education Program? I. G. Smith, Danvers, Mass.—p. 266.
Progress in Diagnosis and Treatment of Syphilis, 1930. A. W. Cheever, Boston.—p. 269.

207: 287-334 (Aug. 18) 1932

Technic of Elective Version. I. W. Potter, Buffalo.—p. 287.
*Routine Prophylactic Injection of Whole Blood in the New-Born: Report of Eight Hundred Cases. R. J. Heffernan, Boston.—p. 293.
What Can the State Department of Public Health Do to Aid in Program of This Section to Improve the Practice of Obstetrics? G. H. Bigelow, Boston.—p. 297.
Resection of Presacral Nerve for Cord Bladder. F. H. Colby, Boston.—p. 302.
Modification of the Kidd Suprapubic Perforator and Introducer. V. Vermooten, New Haven, Conn.—p. 304.
Management of Prostatic Obstructions by Endoscopic Revision. J. F. McCarthy, New York.—p. 305.
Problem of Diagnosis and Treatment of Prostatic Conditions. J. D. Barney, Boston.—p. 313.
Basal Metabolism of Twins. F. B. Talbot, Boston.—p. 318.
Incubation: Improved and Inexpensive Incubator for Premature and Hypothermic Infants. H. H. Livingston, Cambridge, Mass.—p. 320.

Prophylactic Injection of Whole Blood in the New-Born.—Heffernan points out that intracranial hemorrhage is responsible, each year, for a large number of neonatal deaths. Hemorrhages resulting from severe trauma can be prevented only by better obstetrics. Infants subjected to mild trauma during delivery develop intracranial hemorrhage because a prolonged coagulation time and a prolonged bleeding time predispose them to bleed. The routine administration of whole blood is a harmless procedure and seems to be of definite value in reducing the incidence of intracranial hemorrhage and other hemorrhagic conditions of the new-born.

New Jersey Medical Society Journal, Orange

29: 617-682 (Aug.) 1932

General Effects of Malignancy. W. S. Hastings, Philadelphia.—p. 617.
Cancer of Skin. E. E. Downs, Woodbury.—p. 619.
Cancer of Breast. R. W. Teahan, Philadelphia.—p. 620.
Management of Cancer of Cervix, with Emphasis on Diagnosis and Treatment. H. Wammock, Philadelphia.—p. 623.
Modern Management of Malignancy. C. A. Whitcomb, Philadelphia.—p. 626.
Newest Developments in Roentgen-Ray Diagnosis, with Especial Reference to Use of Contrast Mediums. E. A. May, Newark.—p. 631.
Neglected Considerations Concerning Colitis. M. W. Perry, Washington, D. C.—p. 635.
Thoughts on Treatment of Poliomyelitis. M. Cleveland, New York.—p. 643.
Liver Function Tests and Their Value to the Surgeon. M. Baker, Irvington.—p. 648.

New York State Journal of Medicine, New York

32: 947-996 (Aug. 15) 1932

*Traumatisms of Frontal and Temporal Regions and Their Relation to Meningitis from Standpoint of General Surgeon. W. P. Eagleton, Newark, N. J.—p. 947.
*Suberythema Method in Ultraviolet Radiation. J. Echtman, New York.—p. 951.
*Observations on Treatment of Acute Gonorrheal Urethritis. M. M. Melicow, New York.—p. 955.
Thrombosis of Both Coronary Arteries: Two Cases. J. R. Lisa and A. Ring, New York.—p. 961.
Reducing Diets. A. H. Terry, Jr., New York.—p. 964.
Study of Deep and Superficial Reflexes of the New-Born. J. H. Nolan, New York.—p. 968.

Traumatisms of Frontal and Temporal Regions and Their Relation to Meningitis.—Eagleton emphasizes the following points: 1. The limitation of surgery in all cerebral injuries whether accompanied by a skull fracture or not, to the prevention of sepsis and the relief of compression. 2. The diagnostic importance of consciousness and unconsciousness in injuries of the frontal and temporal bony regions. If unconsciousness is present, the importance of ascertaining whether there has been a free interval even if it was only a short one. 3. How to diagnose clinically, while the patient is in good condition, the deceptive cases of linear fracture of the frontal bone that are apt to develop meningitis. 4. The conversion of compound but hidden fractures of the frontal sinus with a tear in the dura into simple fractures. 5. The value of lumbar puncture for the removal of blood from the cerebrospinal fluid in injuries of the brain. 6. The value of the turning reactions in determining whether or not the brain has been damaged by an apparently trivial head injury.

Suberythema Method in Ultraviolet Irradiation.—Echtman aims to impress on those who employ the mercury quartz lamp as a therapeutic modality that burning of the skin is dangerous; that death lurks in the erythema, which is totally unnecessary in the treatment of diseases in which general body irradiation is considered of benefit. Cases are cited showing that patients with apparently poor prognosis were treated by ultraviolet irradiation, the erythema being avoided entirely, with desirable results. The author calls this form of irradiation the suberythema method.

Acute Gonorrheal Urethritis.—Melicow points out that it is important to keep the following facts and principles in mind when one is treating gonorrheal urethritis in the male: There is no cure at present for gonorrhea, but acute anterior gonorrheal urethritis has a tendency to be self limited. Not one of the preparations used today is a specific against the gonococcus. The gentle instillations by the physician (as a surface washing) of small amounts of a warm and mild antiseptic solution, through a smooth-tipped glass syringe with a rubber bulb, is of value in keeping the patient comfortable and the infected area clean. The development of complications prolongs a case of gonorrhea indefinitely. Complications occur most frequently in cases presenting posterior urethritis. Posterior urethritis and complications can best be avoided by proper general management and the avoidance of excessive and irritating local treatment. Complications are most apt to occur if forceful, frequent injections with irritating medications are made. The organisms are thereby enabled to get past the danger zone (that portion of the urethra lying anterior to the urogenital diaphragm). The use of gravity apparatus is unnecessary. The insertion into the urethra of foreign bodies is contraindicated. Heroic chemical measures to eradicate a morning drop that is free from gonococcus or shreds in a clear

urine (i. e., immediately at the end of an attack of acute gonorrheal urethritis) are unnecessary. They often lead to an intractable chemical irritation and secondary infection. Gonorrhea with complications also has a tendency to clear up if treated gently. Owing, however, to the poor drainage of the involved area, its vulnerability to secondary invaders, and inaccessibility to direct treatment, chronicity in most instances is inevitable. The evidence of a cure in acute gonorrheal urethritis is indirect and negative in character. It should be obtained in every case and the patient should be given to understand both the purpose and the significance of the tests.

Northwest Medicine, Seattle

31: 363-408 (Aug.) 1932

Treatment of Some Common Types of Heart Disease. A. R. Barnes, Rochester, Minn.—p. 363.
Diet in Treatment of Heart Disease. E. L. Boylen, Portland, Ore.—p. 368.
Chronic Coronary Artery Disease. L. A. Goldsmith, Portland, Ore.—p. 372.
Biliary Disease as Etiologic Factor in Urticaria. C. C. Goss, Seattle.—p. 377.
Hematopoietic Effect of Nuclear Extractives from Red Blood Cells of Fowl in Pernicious Anemia. N. W. Jones, B. I. Phillips and O. Larsell, Portland, Ore.—p. 380.
Recent Progress in Otorhinolaryngology. E. D. Warren, Tacoma, Wash.—p. 383.
Pyelonephritis in Pregnancy. C. S. Pascoe, Tacoma, Wash.—p. 387.
Outline of History of Medicine in Pacific Northwest. O. Larsell, Portland, Ore.—p. 390.

Philippine Journal of Science, Manila

48: 485-651 (Aug.) 1932. Partial Index

Paris Green Partially Adsorbed on Charcoal as Larvicide for Anopheles Mosquitoes: Larvicide Studies II. A. P. West and P. F. Russell, Manila.—p. 545.
Experiments on Transmission of Surra by Means of Dog Hookworm, Ancylostoma Caninum. L. M. Yutuc, Los Banos, Laguna.—p. 589.

Public Health Reports, Washington, D. C.

47: 1683-1721 (Aug. 12) 1932

Notes on Experimental Meningitis in Rabbits. S. E. Branham and R. D. Lillie.—p. 1683.

47: 1723-1770 (Aug. 19) 1932

*Metamorphoses of Streptococci into Spore-Bearing Rods and into Filtrable Forms. Alice C. Evans.—p. 1723.

Metamorphoses of Streptococci into Spore-Bearing Rods and into Filtrable Forms.—Evans describes experiments in which she demonstrated the metamorphoses of streptococci into spore-bearing rods and into filtrable forms. These observations are discordant with the monomorphic theory, now discarded by most bacteriologists, but they are in agreement with the laws of general biology. As pointed out by the author in an earlier paper (1929), from the point of view of general biology, complex life cycles with metamorphoses accompanied by changes in habitat and biologic behavior should be expected in bacteria, rather than monomorphism. Life cycles are a law of nature and, with the descent in the scale of life, the cycles become more and more complex, and metamorphoses, with the concomitant changes in habitat and in biologic behavior, become more and more pronounced. Algae, fungi and protozoa—the plant and animal groups standing next higher than the bacteria—exhibit marvelous life cycles. It is unreasonable to think that a law of nature which becomes more and more complex with the descent in the scale of life would be suspended in its lowest known form.

Texas State Journal of Medicine, Fort Worth

28: 253-310 (Aug.) 1932

Relationship of Tuberculosis to General Medicine. F. M. Pottenger, Monrovia, Calif.—p. 258.
Childhood Type of Tuberculosis. J. B. McKnight, Sanatorium.—p. 263.
Prevention of Tuberculosis in Children. Elva A. Wright, Houston.—p. 266.
Health Survey of Abilene High School Students, Stressing Incidence of Tuberculosis. G. A. Gray, Abilene.—p. 269.
Evaluation of Tuberculin Tests and Chest Roentgenograms in School Health Survey. E. D. Sellers, Abilene.—p. 272.
First Episode in Clinical Tuberculosis. O. E. Egbert, El Paso.—p. 276.
Importance of Early Roentgen-Ray Examination in Pulmonary Tuberculosis. E. V. Powell, Temple.—p. 280.
Indications for Thoracoplasty and Technic. W. P. McCrossin, Jr., Colorado Springs, Colo.—p. 283.
Use of Fetal Spleen in Agranulocytosis: Preliminary Report. A. E. Greer, Houston.—p. 289.
Postvaccinal Encephalitis. T. L. Denson, Temple.—p. 292.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

44: 417-468 (Aug.-Sept.) 1932

Cambridge Men and Dermatology. H. Rolleston.—p. 417.
*Dye Dermatitis in Relation to Idiosyncrasy. J. T. Ingram.—p. 422.
Monilia Pinoyi: Some Further Studies in Connection with Its Cultures and Chemical Reactions. D. H. Haler.—p. 435.

Dye Dermatitis in Relation to Idiosyncrasy.—Ingram reports cases and investigations relating to dermatitis due to contact with dyestuffs. He found that approximately 4 per cent of normal individuals show an idiosyncrasy toward the phenylenediamines. In these subjects contact with the chemicals provokes dermatitis. The resulting dermatitis may not appear for a period varying from twenty-four hours to twenty-four days after contact. These delayed reactions confirm the view that the dermatitis is a sensitization phenomenon. The importance of determining the ease with which sensitiveness may be acquired has been indicated but has not yet been investigated. The author concludes from his work that "patch test" investigations need to be kept under close observation for a period of not less than one month to secure full and accurate results.

British Journal of Physical Medicine, London

7: 57-76 (July) 1932

Principles of Physical and Hydrotherapeutic Treatment of Arthritis. F. Munk.—p. 60.
Causes, Prevention and Treatment of Diathermy Burns. W. C. Douglass.—p. 62.
Combined Use of Pistany Mud and Electrical Methods of Treatment. L. Schmidt.—p. 64.
Treatment of Postinfluenzal Debility. E. Cyriax.—p. 65.
Spas and Spa Treatment in Europe. M. B. Ray.—p. 66.

British Journal of Radiology, London

5: 609-672 (Aug.) 1932

Calculation for Pelvimetry by Roentgen Rays. W. H. Hooton.—p. 617.
Experimental Observations on Effect of Radium on Precancerous Skin Area. W. Cramer.—p. 618.
Some Notes on Roentgen-Ray Apparatus. R. J. M. Tozer.—p. 631.
*Radiologic Demonstration of Potential Pharyngeal Diverticulum. E. D. Gray.—p. 640.
*Action of Radium on Blood Supply: The White Reaction. J. C. Mottram.—p. 643.
New Viewing Box. S. K. Montgomery.—p. 646.

Roentgen Demonstration of Pharyngeal Diverticulum.—In a series of 250 consecutive roentgen examinations of the pharynx, Gray has six times seen a pointed barium-filled projection from the posterior pharyngeal wall at the level of the cricoid cartilage. The roentgen appearances indicate a horizontal recess which, from its shape and position, the author believes to be due to herniation of the pharyngeal mucous membrane through the fibers of the cricopharyngeal muscle, and therefore to represent a potential pharyngeal diverticulum.

Action of Radium on Blood Supply.—Mottram points out that after a surface application of radium the skin sometimes shows a white or pale area corresponding to the part irradiated. This precedes the erythema and is usually accompanied by slight edema. When the thin, transparent, featherless skin overlying the pectoral muscle in the chicken is irradiated with β radiation, a white discoloration appears in the underlying muscle two or three days later and may persist until it is concealed by the onset of erythema in the overlying skin. This white reaction also occurs in tumors when they are irradiated. If a mouse or a new-born rat is inoculated subcutaneously with a small piece of tumor, the subcutaneous growth which arises appears pink through the translucent skin. If this tumor is irradiated with β or γ radiation it will turn purple in a few days and subsequently white and bloodless. If it has been given a dose of radiation sufficient to cause it to disappear, it will remain white or yellowish. If, however, a sublethal dose has been given, then its normal pink color will return and it will continue to grow. In old rats it is not possible to see these vascular changes on account of the opacity of the skin. They can, however, be demonstrated by inoculating large quantities of india ink into the tail vein. Sometimes the animals die before sufficient ink has been inoculated; but when the inoculation is successful the whole vascular system is filled with ink, and the

tissues are stained more or less black according to their blood content. To demonstrate the ink content of both normal and irradiated tumors, the author fixed the growths in solution of formaldehyde, cleared them in cedarwood oil, and cut them through the center. Microscopic examination revealed that the india ink did not penetrate into those parts of the tumors which had been near the radium. The difference between the irradiated and control tumors growing in the same rat was evident. This effect occurs two or three days after exposure to radium. That irradiation interferes with the blood supply was also demonstrated by exposing the allantoic membrane of chick embryos to irradiation. These observations confirm the conclusions from previous researches, which showed that action on capillaries and blood vessels, in obstructing blood flow, is of great importance in the disappearance of tumors after irradiation.

British Medical Journal, London

2: 229-280 (Aug. 6) 1932

*Bronchiectasis. C. McNeil.—p. 229.
*Recent Research on Sex Hormones and Their Cyclic Production. F. H. A. Marshall.—p. 232.
Mental Health in Relation to Education. H. Crichton-Miller.—p. 234.
Some Comments on Syphilis in Women. J. J. Abraham.—p. 237.
*Nonoperative Treatment of Chronic Hydrocele of Tunica Vaginalis. M. Whitby.—p. 240.

Bronchiectasis.—McNeil points out that in bronchiectasis one is dealing with several morbid conditions—bronchial catarrh, the retention of secretions in the bronchial dilatations, and fibroid change in the bronchi and adjoining lungs. The fibroid change is an incurable condition, but it is also rather a help than a hindrance in limiting bronchial dilatation. In the treatment one cannot hope to do more than reduce the size of the cavities and procure a regular emptying of their contents; in actual practice one can seldom achieve so much. These two objects may be attempted by medical and hygienic measures alone, or by adding to them more radical and surgical procedures. The author hopes that the discussion of his article will draw out information regarding a variety of recent radical procedures. So far the medical treatment of bronchiectasis must be described as ineffective. In most cases it has achieved only an amelioration of the symptoms, and its comparative failure has encouraged and justified the trial of bolder measures. Of medical measures the most effective is daily postural drainage, the child lying on his face on a steep inclined plane for at least half an hour once or twice a day, and continuing to do so until there is marked reduction in the quantity of sputum. Some help may also be obtained from regular spraying of the nose and throat with glycerin solutions; this aids expectoration and prevents the reinfection of the bronchial surfaces from infected nasal and throat secretions. Among the expectorants, belladonna and potassium iodide sometimes help a little. Inhalations may also help in aiding expectoration but in the author's experience have not done more than that. Vaccines have been quite ineffective in his hands. In addition, the institution of good hygiene, open-air conditions, prolonged rest, and simple respiratory and gymnastic exercises are of real value in promoting good nutrition and in maintaining the general health at a high level. Most cases of bronchiectasis respond quickly to such measures in the hospital; weight increases, while cough and sputum greatly diminish. When, however, the child returns home the symptoms soon reappear. It is probable that better results could be obtained by far more prolonged treatment on the lines mentioned, especially if such treatment could be begun and continued at an early stage in the bronchiectatic condition. So far the reported results of bronchoscopic lavage and of the great variety of surgical treatments by way of the pleura and lung are not encouraging. The more drastic procedures which extirpate the affected area of lung are attended with a high mortality. Those that aim at producing collapse of one lung are confined to the unilateral cases, which are often of benign type with a fair standard of general health and a good enough expectation of life, and in which the existing fibroid change makes further collapse difficult to attain. Bronchoscopic lavage is a safer and more radical treatment; it is a direct attack on the real therapeutic problem of the dilated bronchi and their retained and septic contents. Its immediate results in older persons are often excellent, but there are difficulties in the frequent use of the bronchoscope in young children. It may be hoped that with improvement in the technic of bronschoscopy a real advance in the treatment of bronchiectasis will be achieved.

Sex Hormones and Their Cyclic Production.—According to Marshall, clinical applications of the sex hormones must at present, at any rate, be strictly limited in scope. The use of estrin is indicated only in cases in which there is evidence of a natural deficiency of this substance as with certain types of amenorrhea, or after ovarian extirpation, and, much more problematically, at the time of the menopause. The indiscriminate usage of estrin for other disorders has no basis in physiologic fact and may justly be stigmatized as quackery. In a similar way the use of progestin may only at present be reasonably justified in cases in which there is evidence of a deficiency of this hormone, if indeed this ever occurs. Such deficiency may conceivably be an occasional cause of abortion, but, as far as the author is aware, there is no direct proof of this ever happening.

Nonoperative Treatment of Hydrocele of Tunica Vaginalis.—During the past five years, Whitby has performed the injection treatment of chronic hydrocele of the tunica vaginalis on ten private patients, in none of whom has there been any recurrence within three months to three years. Impotence occurred in one case for about six months; otherwise normal testicular function was maintained in all. No direct cause could be assigned to any case from an investigation of the fluid withdrawn from the sac. Injection treatment is simple, effective and curative and is not followed by untoward complications. There is no recurrence or complications such as are sometimes encountered after open operation. No anesthetic is necessary for injection treatment, and there is the minimum absence from work. Small quantities of iodized phenol are injected into the cavity of the tunica vaginalis, with the object of cauterizing the endothelial surface, closing the stoma, and causing the two surfaces of the sac to adhere together—thus closing the cavity completely. If an inflammatory reaction is produced in this way, protoplasmic buds during the process of healing are sent out from the surfaces, which adhere to form a fibrosed mass. Unless the fluid injected is equally distributed over the surface of the endothelium, loculi will form, and recurrence will occur more easily. Also unless the fibrosed mass—in fact before it has time to become too fibrosed—is massaged regularly, inflammatory reaction will be set up in the testis and may cause impotence. The amount to inject in each case must be decided by the general condition of the patient and the size of the hydrocele. Not more than 5 cc. should be injected at any one sitting or serious inflammatory reaction will occur. It is better to commence with 2 cc. The patient is placed in the lithotomy position on a genito-urinary table and the entire perineum and scrotum cleansed with ether soap; surgical denatured alcohol is applied, which partly anesthetizes the area. The surgeon stands in front of the patient and with his left hand applies pressure from above downward from the upper part of the scrotum, so that his fingers lie behind and can palpate the testis. A 20 cc. record syringe, fitted with a full size needle, is used. The needle is thrust through the scrotal tissues in an upward direction, care being taken to avoid the superficial vessels. When the sac is pierced all resistance disappears, demonstrating that the sac has been entered. All the fluid is withdrawn with the syringe. Then, with the needle still in situ, iodized phenol (4 parts of iodine to 2 parts of phenol, 3 minims for every ounce of fluid withdrawn is safe) is injected into the sac through the same needle. This is removed as soon as the injection has been completed, and the scrotum is massaged for about five minutes. A collodion dressing is applied to the needle puncture. The patient usually experiences a burning sensation for a few minutes. Sal volatile should always be at hand, as the patient sometimes feels faint. After treatment the patient should rest in bed for twenty-four hours with the scrotum supported on a pillow, and should there be any pain, a lotion, such as lotion of lead and opium, should be applied frequently on lint.

Journal of Laryngology and Otology, Edinburgh

47: 517-588 (Aug.) 1932

Paracusis Willisii and Some Clinical Features of Otosclerosis Syndrome. G. J. Jenkins.—p. 517.
Aural Vertigo. W. S. T. Neville.—p. 533.
Pathology of Deaf-Mutism. J. S. Fraser.—p. 538.

Journal of Tropical Medicine and Hygiene, London

35: 225-240 (Aug. 1) 1932

Descriptive Study of Cercaria of S. Haematobium in the Sudan. R. G. Archibald and A. Marshall.—p. 225.
Note on Serologic Varieties of Bacillus Morgan No. 1 (Salmonella Morgani Cast. and Chalm.). A. Castellani and M. Douglas.—p. 228.
Diseases of Australian Aborigines. H. Basedow.—p. 229.

Medical Journal of Australia, Sydney

2: 99-126 (July 23) 1932

"Fifty Years in a Changing World": The British Medical Association in Australia. R. S. Skirving.—p. 99.
Postoperative "Pneumonia": Report of Four Cases. H. C. R. Darling.—p. 104.
*Treatment of Blindness Associated with Retinitis Pigmentosa. N. D. Royle.—p. 111.

2: 127-160 (July 30) 1932

Etiology of Erythroedema (Swift's Disease, Pink Disease, Erythroedema, Polyneuritis, Juvenile Acrodynia, Trophodermatoneurose), with Especial Reference to Blood Culture. W. J. Penfold, Hildred M. Butler and I. J. Wood.—p. 127.
Chronic Diarrheas: Their Etiology and Treatment. A. S. Walker.—p. 136.

Blindness Associated with Retinitis Pigmentosa.—According to Royle, thoracic sympathetic trunk section affords relief in the treatment of blindness associated with retinitis pigmentosa. The relief is more marked in younger patients and in those in whom the disease has not been present for a long period. Complete blindness of long standing is a contraindication to operation.

Quarterly Journal of Medicine, Oxford

1: 361-469 (July) 1932

*Gastric Secretion in Pernicious Anemia. J. F. Wilkinson.—p. 361.
Effect of Massage on Metabolism of Normal Individuals. D. P. Cuthbertson.—p. 387.
*Certain Effects of Massage on Metabolism of Convalescing Fracture Cases. D. P. Cuthbertson.—p. 401.
Aleukemia Myelosis of Leukopenic Type, Clinically Simulating Chronic Aplastic Anemia. F. P. Weber.—p. 409.
*After-History of Artificial Pneumothorax: Comments on Ninety-One Successful and Thirty-One Unsuccessful Cases. R. R. Trail and G. D. Stockman.—p. 415.
*Correlation of Certain Blood Diseases on Hypothesis of Bone Marrow Deficiency or Hypoplasia. F. G. Lescher and D. Hubble.—p. 425.
Clinical and Pathologic Study of Bronchiectasis. H. H. Moll.—p. 457.

Gastric Secretion in Pernicious Anemia.—Wilkinson examined a series of 208 persons with pernicious anemia by the method of fractional gastric analysis. Two hundred were shown to have achylia gastrica. The fasting contents usually contained considerable amounts of mucus but no blood, pus, starch or lactic acid; bile was occasionally found. The average volume was 15.3 cc.; 72 per cent of the patients had fasting contents of less than 21 cc., and in only 2 per cent did the fasting contents exceed 50 cc. The average emptying time of the stomach was 1.6 hours and in 85 per cent of the patients the stomach had emptied at the end of two hours. The total acidity titers usually lay between 5 and 10 units. The total and mineral chlorides showed approximately parallel titers; the values varied considerably in different cases, but there was apparently no relationship between them and the clinical condition. The peptic activities of the gastric secretion in pernicious anemia were negligible. The occurrence of free hydrochloric acid in the gastric secretion in cases of pernicious anemia is also discussed, and all the reported cases collected from the literature. Eight cases in which the patients had free gastric acid were observed and considered. Two were instances of pernicious anemia of pregnancy; in another, malignant ulceration of the fauces developed; the remainder were instances of pernicious anemia. The effects of acetylcholine and histamine on the gastric secretion were examined in twenty-five and sixteen cases, respectively, of pernicious anemia. Free hydrochloric acid was not detected in any sample, and the total acidities and peptic activities remained apparently unchanged. The chlorides were (1) increased, (2) unchanged and (3) diminished. After histamine these groups contained seven, eight and one cases, respectively, and after acetylcholine twelve, twelve and one cases, respectively. The average emptying time of the stomach was 1.9 hours after histamine (control 1.9 hours) and 1.75 hours after acetylcholine (control 1.6 hours). Mucus was absent from or negligible in all samples after acetylcholine and histamine. The effects of liver and hog stomach preparations on the gastric secretion in pernicious anemia were also investigated. Free hydrochloric acid was not produced in any sample. The total acidities were increased after liver extracts. There were only slight increases in the total chlorides. The emptying time of the stomach was unchanged. The peptic activities of all samples after a desiccated stomach-gruel meal were good until the stomach had emptied.

Effects of Massage on Metabolism of Fracture Patients.—Cuthbertson reports that massage supplemented by passive movement, when applied even for twenty minutes a day, to patients convalescing from fractures of the long bones, causes generally, but not constantly (seven out of nine experiments), a decreased urinary excretion, in effect, and increased retention of nitrogen, sulphur and phosphorus. Muscle and bone appear to be the tissues chiefly affected by this anabolic activity.

After-History of Artificial Pneumothorax.—Trail and Stockman point out that a complicating hydropneumothorax may be expected in fully 50 per cent of successful inductions of pneumothorax, but it does not necessarily interfere with the normal length of treatment, nor need it unduly affect the prognosis. Pneumothorax would appear to be one of the quickest methods of curing laryngeal tuberculosis in patients for whom such treatment is otherwise suitable. There is a better prognosis when pneumothorax cannot be induced, because no pleural space, or only a small pocket of air, is found at attempted induction, than in cases in which it has been possible to start the treatment and later found necessary to abandon it owing to the presence of gross adhesions.

Correlation of Certain Blood Diseases.—According to Lescher and Hubble, a group of bone marrow disorders in which the blood elements are deficiently produced includes agranulocytic angina, idiopathic purpura hemorrhagica, pure red cell anemia, and aplastic anemia. All these conditions probably have a common pathogenesis. Intermediate cases are frequently recorded, and known toxins such as benzene can produce any one of these clinical pictures. In agranulocytic angina the evidence collected indicates that the sepsis in this disorder occurs secondarily to the leukopenia. The authors conclude that there are at least two types of purpura hemorrhagica which are not, at present, clinically distinguishable. In one of these types there is deficient production of platelets by the bone marrow. Only three cases of pure red cell anemia have been found in the literature, and these are quoted. The etiology, signs, symptoms and differential diagnosis of aplastic anemia are described in detail. Cases are described illustrating the difficulties of differential diagnosis. The treatment of all these bone marrow disorders is considered together. The theories of pathogenesis of aplastic anemia are critically reviewed, and it is suggested that aplastic anemia and the allied disorders are examples of bone marrow deficiencies in which the essential regulating factor that initiates and controls the development of the blood cells from the reticulo-endothelial system is defective. The authors propose a new nomenclature which coordinates these bone marrow deficiencies.

South African Medical Journal, Cape Town

6: 419-450 (July 9) 1932

Medical Schools of South Africa. C. Beattie.—p. 421.
The Profession and the Public: Presidential Address. J. Bruce-Bays.—p. 424.

Japanese Journal of Experimental Medicine, Tokyo

10: 123-264 (June 20) 1932

Experimental Study on Heart Function: II. Influence on Function of Extirpated Toad Heart of Skeletal Muscle Extract and Potassium Exposed to Ultraviolet Rays, Roentgen Rays and Radium Radiation, and Characteristics of Active Substance Contained in Alcohol Extract of Skeletal Muscle. M. Oana.—p. 123.
Id.: III. Control Experiment. M. Oana.—p. 157.
Normal Secretion of Pavlov Stomach. I. Sugishima.—p. 177.
Influence of Cell Constituents of Erythrocytes and Various Organs on Recovery from Experimental Anemia: I. Experiment of Parenteral Administration of Erythrocytes and Bone Marrow Cell Constituents. A. Oka.—p. 203.
Id.: II. Effect of Parenteral Administration of Cell Constituents of Various Organs. A. Oka.—p. 223.
Physical and Chemical Properties of Bacteriophages. K. Muramatsu.—p. 257.
Experimental Study on Method of Immunization by Rubbing Typhoid Bacillus Unguent into Skin. E. Hojo.—p. 263.

Presse Médicale, Paris

40: 1381-1396 (Sept. 10) 1932

Tuberculin Allergy and Immunity in Tuberculosis. A. Calmette.—p. 1381.
Successive Resection of Both Internal Jugular Veins in Course of Bilateral Removal of Cervical Lymph Nodes. G. Leclerc and J. Roy. —p. 1382.
*Allergy to Egg White in Nurslings. P. Woringer.—p. 1383.
*Mechanism of Action of Bacteriophage in Treatment of Tonsillar Phlegmons. D. Combiesco, I. Tzetzu and M.-S. Popesco.—p. 1386.

Allergy to Egg White in Nurslings.—Woringer distinguishes two types of allergy to egg white in nurslings. In the common type, which he calls holo-allergy, intracutaneous injection of a small quantity of egg white gives only a local reaction, but injection of the same quantity subcutaneously or intramuscularly produces a generalized urticaria, while injection of a large quantity of allergen produces a severe anaphylactic crisis. The serum of holo-allergic persons gives a positive Prausnitz and Kustner reaction; that is, when it is injected into normal persons, subsequent injection of ovalbumin produces a cutaneous reaction. The author regards this as a reaction between the antibody contained in the injected serum and the antigen. This is supported by the fact that the cutaneous reaction can be provoked only once, and also that the serum can be neutralized by the addition of egg white before injection. The author designates the ovalbumin antibody in the serum of holo-allergic persons as antibody A. This antibody cannot be produced experimentally in normal persons; however, a different antibody which does not give a positive Prausnitz and Kustner reaction but is demonstrable by complement-fixation tests can be produced. This is termed antibody B. In some persons who are allergic to egg white according to their cutaneous reaction, the subcutaneous injection of ovalbumin does not produce urticaria or shock. The author calls this condition dermo-allergy. The serum of dermo-allergic infants does not give a positive Prausnitz and Kustner reaction, indicating that it contains no antibody A. Nurslings with purely cutaneous sensitivity to ovalbumin are incapable of forming antibody A, which characterizes congenital allergy, and they respond to injections of egg white like a normal person. However, like the holo-allergic infants they are always eczematous. The author thinks that allergy to egg white is an hereditary property of the cells, derived from the ovum or the seminal cell. All nurslings exhibiting ovalbumin allergy, whether holo-allergy or dermo-allergy, were found to be eczematous or to have had eczema. Contact with the allergen is not necessary for the production of the eczema. It appears that the allergic disposition is favorable to the production of the eczema, but contact with the allergen is not the direct cause; this differentiates it from urticaria. Age seems to be one of the factors influencing the appearance of eczema. In most of the cases the eczema disappeared after the first or second year, although the allergy to egg white persists forever. Specific desensitization decreases the severity of the eczema but cannot make the allergy disappear.

Bacteriophage in Treatment of Tonsillar Abscesses.—In their clinical experience Combiesco and his associates have found that the treatment of tonsillar abscesses with antistaphylococcus bacteriophage assures a rapid cure, usually within a few days. This treatment may be employed at any stage of evolution of the abscess but is most indicated at the stage of infiltration. As the results obtained by the authors with the staphylococcus bacteriophage were uniformly good no matter what the bacterial flora of the pus, they think that these results cannot be due to a specific action of the lytic principle or from its exclusive action. Treatment of the abscesses with antistaphylococcic or antistreptococcic filtrate prepared according to Besredka's method, as well as sterile peptone broth and physiologic solution of sodium chloride, gave the same results. They think that the mechanism of the therapeutic action of bacteriophage in the treatment of tonsillar abscesses may fall in the same category as the action of topicas employed in surgical therapy. The action of fluids inoculated into the abscesses may consist of a stimulation of the defense elements of the organism. The stimulant may be the bacteriophage, the substances contained in the bacterial filtrates, the broth, the physiologic solution of sodium chloride or other substances.

40: 1397-1412 (Sept. 14) 1932

Hodgkin's Disease and Tuberculosis. C. Laubry and G. Marchal.—p. 1397.
Clinic and Meteorology. G. Mouriquand.—p. 1400.
*Indications and Limitations of Pleuroscopy. C.-A. Piguet and W. Froehlich.—p. 1404.

Indications and Limitations of Pleuroscopy.—Piguet and Froehlich advise the clinician against seeking at all costs to complete the aerial collapse of a partial ineffective pneumothorax. There are cases in which section of the adhesions by the method of Jacobaeus or loosening of the adhesions at their insertion into the thoracic wall by Maurer's method is not successful. There are cases in which the pneumothorax is ineffective either because posterior or posteromediastinal adhesions could not be suppressed, or because the condition of the pulmonary tissue itself, especially the pericavitary tissue, did not permit the desired collapse. If there is a large cavern or one situated close to the visceral pleura, freeing the lung and continuing the pneumothorax constitute permanent dangers to the patient, even if Maurer's method has been used. It is in these cases that the methods of surgical collapse therapy, above all phrenicectomy, are capable of achieving a better result more rapidly and economically. The authors discuss some of the indications and limitations of the methods of Jacobaeus and Maurer. They think that the practitioner in each case should choose that method which seems to assure the best result in the shortest time without great risk.

Clinica Medica Italiana, Milan

63: 689-782 (Aug.) 1932

Dementia Paralytica and Juvenile Tabes Dorsalis. V. G. Barone.—p. 689.
*Action of Adenylic Acid on Heart and Its Vessels from Point of View of Theory of Cardiac Hormone. A. Orsi and L. Pontoni.—p. 703.
Effects of Mercuric Chloride on Kidney. C. Cipriani and F. Marcolongo. —p. 745.

Action of Adenylic Acid on Heart and Its Vessels.—Orsi and Pontoni experimented with adenylic acid injected intravenously in doses of from 1 to 4 cg. into normal persons and into patients with myocardiac and angiose manifestations. The authors found an almost constant increase in the frequency of the pulse. Such tachycardia was of short duration and of the sinusal type. Only one of the authors' cases showed nodal rhythm of increased frequency. Normal persons and myocardiac patients treated with doses of 2 cg. showed phenomena of heart block occasioned by a simple increase of the rhythm of conduction until complete atrioventricular dissociation occurred. Even in cases in which tachycardia is not present, there is often an increase of depth and frequency of respiration, lasting no longer than the other cardiac phenomena. Injection is generally well supported except for (1) a slight feeling of precordial respiratory spasm, with a feeling of heat localized over the region of the heart and then spreading throughout the whole body, and (2), less often, temporary myoclonia. The anginose pain greatly diminishes after a first transitory exacerbation. Such an effect can also be obtained by the continued oral administration of small doses (2.5 mg.). The action of adenylic acid on the peripheral vessels in oral and parenteral administrations of 2.5 mg. consists in a transitory vasodilatation, in a complex reaction in which vasoconstriction follows the vasodilatation or else in a vasoconstriction. This variety of behavior may be accompanied by an increase as well as a decrease in the rate of the pulse, according to the action of the substance on the heart. The tachycardia and increase of the volume of the pulse remind the authors of a certain analogy with the action of the cardiac hormone in the sense of Haberlandt, while the block phenomena observed in the beginning would be opposed to the hormonal nature of the preparation. Adenylic acid belongs to those substances of biogenous nature (histamine, choline, epinephrine), which cause a pronounced reactivity of the heart and vessels; normally, the action of adenylic acid tends to accelerate the cardiac rhythm and to cause vasodilatation in the coronaries and the peripheral vessels. The therapeutic application of adenylic acid should be confined to retrosternal anginoid oppression and to disturbances of the general peripheral circulation, namely, the disturbances of essential and arteriosclerotic hypertension, or to those of Buerger's disease, gangrene due to arteritis and Raynaud's disease.

Policlinico, Rome

39: 1425-1460 (Sept. 12) 1932. Practical Section

Sexual Hormonization with "Follicular Liquor" by Ingestion. C. Delfini and G. Pighini.—p. 1425.
Uropyonephrosis Due to Previous Section of Ureter: Nephrectomy; Treatment. C. M. Le-Roy.—p. 1428.
Clinical Evidence of Influence of Diseased Kidney on Healthy Kidney. S. Scandurra.—p. 1432.
*Staining of "Spirochaeta Pallida" with Diluted and Alkalinized Gentian Violet. M. Zingale.—p. 1435.

Staining of "Spirochaeta Pallida" with Gentian Violet.—Zingale advocates a staining process which definitely distinguishes between spirochetes and pseudospirochetes. It consists of 10 Gm. of saturated alcoholic solution of gentian violet in 100 Gm. of filtered aniline water and an alkaline solution of 10 cg. of neutral potassium carbonate in 200 Gm. of distilled water. From 10 to 12 cc. of the alkaline solution is put in a large watch glass, and to this is added 1 drop of gentian violet for every cubic centimeter of solution. After fixation of the smear, the cover glass is placed upside down on the liquid surface of the solution in the watch glass. The solution is heated until it steams and is kept constantly so for three minutes, the maximum duration for efficient staining. The smear is washed in running water and dried and is then ready for observation. The author states that the cellular detritus is stained a bright violet on a pearl gray background. The bacilli, cocci and spirilla are stained a deep purple; the red blood corpuscles, a bright lilac. Spirochaeta pallida take on the deeper lilac coloring of the borders of the erythrocytes. Artificial light is used to examine the preparation, and should consist, preferably, of an azure lamp (50 candle power, one-half watt). The author states in conclusion that gonococci, streptobacilli and spirochetes can all be stained by his gentian violet solution.

Archiv. f. Schiffs- u. Tropen-Hygiene, Leipzig

36: 461-514 (Sept.) 1932

*Malaria and Blood Sugar Concentration. F. Q. Otero.—p. 461.
Congenital Malaria. P. Wayl.—p. 473.
Immunity Against Certain Species of Malaria Parasites. P. S. Djaparidse.—p. 476.
Relation Between Malaria and Epilepsy? K. Holm.—p. 478.
*Diabetes Insipidus in Pellagra. J. A. Rassulev.—p. 481.
Therapy of Cutaneous Leishmaniosis. B. Laqueur.—p. 489.
Method of Puncture of Bone Marrow in Tropical Diseases of Central Asia. J. A. Kassirskiy.—p. 492.
Duration of Filaria Infections. K. Knabe.—p. 496.
Atypical Case of Amebic Dysentery. G. Holl.—p. 500.

Malaria and Blood Sugar Concentration.—Otero cites statements from the literature indicating that the question as to whether malaria increases the blood sugar content and whether in certain cases it may even lead to diabetes mellitus is still answered in different ways. He then discusses the various causes to which the disturbances in the blood sugar have been ascribed; namely, fever, anaphylactic shock, nervous and endocrine disturbances and hepatic disorders. He then describes his own studies. He observed increased glycemia in 84 per cent of the patients with malaria whom he examined in regard to the blood sugar concentration. This increase has no connection with the fever attacks, for it is present during the attacks as well as during the feverless periods. In discussing the rôle of anaphylactic shock in the pathogenesis of hyperglycemia, he calls attention to the decrease in the alkali reserve, which he also noted in his patients with malaria. He found this decrease more pronounced during the fever attacks than during the feverless periods. For the pathogenic significance of nervous and endocrine disturbances he found no definite proof. In discussing the significance of hepatic disturbances, he points out that the malarial parasite requires sugar for its existence, and he considers disturbances in the hepatic function as the main cause of hyperglycemia in malaria. In the beginning phase of malaria the hyperglycemia is caused by a reflex reaction on the part of the parasites; in the later stages it is the result of lesions of the cells of the liver parenchyma. However, all these disturbances are temporary, for they disappear after treatment.

Diabetes Insipidus in Pellagra.—Rassulev reaches the following conclusions concerning diabetes insipidus in pellagra: 1. The syndrome of diabetes insipidus is produced in 25 per cent of cases of pellagra. 2. The course of diabetes insipidus in pellagra is characterized by lability and an undulatory form of its various manifestations. 3. There is no essential difference between manifest and latent diabetes insipidus. 4. Diabetes insipidus exists in a normochloremic and in a hypochloruric form. 5. Diabetes insipidus during pellagra has diagnostic significance for the recognition of pellagra sine pellagra, and differential diagnostic significance for the differentiation of pellagra from other similar disorders, such as sprue, pernicious anemia and enterocolitis.

Deutsche medizinische Wochenschrift, Leipzig

58: 1351-1390 (Aug. 26) 1932

*Significance of Yielding Mediastinum in Pneumothorax Therapy. H. Alexander.—p. 1351.
Hormone of Parathyroids and Its Occurrence in Other Organs. G. Peritz.—p. 1354.
*Treatment of Sprue with Liver and Iron. Schottmüller.—p. 1356.
Intramedullary Angioma and Diagnosis of Tumors of Spinal Cord. F. Schultze.—p. 1357.
Experiments on Treatment of Bronchitis with Ether According to Bier. T. Gordonoff.—p. 1358.
*Inflammatory Strictures of Rectum Caused by Lymphogranuloma Inguinale. K. Lutz.—p. 1360.
Mache Unit (Confusion of Terminology in Medical Radium Literature). A. Janitzky and H. Lampert.—p. 1361.
Scurvy Treated with Synthetic C Vitamin. O. Römcke and O. Rygh.—p. 1362.
Infectious Diseases of Urinary Passages. R. Oppenheimer.—p. 1363.
Treatment of Anemias. A. Kaffler.—p. 1364.

Significance of Yielding Mediastinum in Pneumothorax Therapy.—From the anatomic conditions surrounding the mediastinal space, Alexander concludes that equilibrium is possible only as long as the forces on the two sides are equal. He further points out that a sidewise displacement of the mediastinum is possible, and after discussing the various forms of displacement he evaluates their practical significance. By explaining the physiologic functions of the mediastinum he shows that a yielding mediastinum may impair the circulation and by this may further the tuberculous process. He warns against unnecessary pressure increase in pneumothorax and cites a case in which, shortly after a pneumothorax had been made, repeated hemorrhages occurred. In order to effect a compression of the bleeding vessel the pressure was more and more increased, but it was overlooked that a yielding mediastinum existed and that the hemorrhages were the result of a stasis. The hemorrhages ceased at once when the opposite measures were taken; that is, after the pneumothorax had been reduced so that the mediastinum was in a normal position and its pendular movements were limited to a minimum. He further points out that a yielding mediastinum may prevent an effective pulmonary collapse. On the other hand, it becomes understandable why the simultaneous bilateral pneumothorax is frequently tolerated so well, for it reestablishes equilibrium among the forces acting on the mediastinum. The danger that a yielding mediastinum represents in thoracoplasty was recognized long ago, but that a yielding mediastinum may cause life endangering complications even in case of unilateral artificial pneumothorax has so far not been reported in the literature and for this reason the author describes several of his own experiences. When a patient becomes cyanotic and gasps for air a few hours after the pneumothorax has been made, it is advisable to withdraw some of the pneumothorax air and to administer cardiac stimulants, such as strophanthin. Frequently it is possible to refill the pneumothorax later, but it is also possible that a new attack may set in, and it is therefore advisable first to strengthen the heart by digitalization and then induce the pneumothorax gradually by introducing only small quantities of air at one time.

Treatment of Sprue with Liver and Iron.—Schottmüller, after calling attention to the fact that the blood picture of sprue is in some respects similar to pernicious anemia, and after pointing to diarrhea as one of the most significant symptoms of sprue, relates a case in which he effected a cure within two weeks by injecting liver extract and by giving large doses of reduced iron. He does not feel justified in drawing general conclusions about the treatment of sprue from this one case, but from observations in this and other cases in which intestinal disturbances exist he is convinced that large doses of iron have a favorable influence on the intestinal function, in that they counteract certain types of diarrhea; but he also admits that there are some patients who do not tolerate large doses of iron but react with vomiting and diarrhea. After pointing out that

liver treatment of sprue should not be done by giving fresh liver but best by injecting liver extract, he expresses the hope that at least in some cases of sprue the liver and iron therapy will prove helpful.

Strictures of Rectum Caused by Lymphogranuloma Inguinale.—Lutz is of the opinion that the formerly generally accepted theory that inflammatory strictures of the rectum are primarily of a gonorrheal, tuberculous or syphilitic origin must be abandoned, for a large number of these strictures are caused by a late involvement of the rectum in lymphogranuloma inguinale. This can be proved by the Frei test. The fact that these structures are usually located quite low and that they are most frequent in women can be explained by the topographic anatomic structure of the lymphatic system of the genital and of the anorectal region in women. In regard to the treatment, the author states that in the beginning it may be conservative, consisting of careful bougienage in combination with irrigation and diathermy treatment. If this treatment does not bring the desired results, a preternatural anus can be made and the bougienage and irrigation can be continued. If this method likewise fails, the entire diseased portion of the rectum should be removed by an abdominosacral amputation.

Frankfurter Zeitschrift für Pathologie, Munich

43: 409-570 (Aug. 23) 1932

*Significance of Spleen in Growth and Metabolism of Malignant Tumors. W. Büngeler.—p. 409.
*Action of Roentgen Rays on Lungs and Heart of Animals. M. I. Karlin and B. N. Mogilnitzky.—p. 434.
Perforated Aneurysm of Left Vertebral Artery Resulting from Gumma of Vascular Wall. A. Esser.—p. 448.
*Fatal Hemorrhages from Varices of Esophagus in Cases Without Cirrhosis of Liver. J. Nochimowski.—p. 463.
Congenital Stenosis of Aorta and Endocardial Hyperplasia in a New-Born Infant. E. Dissmann.—p. 476.
Are There Giant Cell Sarcomas? E. Kotzian.—p. 484.
Primary Plasmacytomas. W. G. Molotkoff.—p. 508.
Studies on Bony Internal Ear in Anencephalia. B. G. Turkewitsch.—p. 517.
Clinical and Radiological Aspects of Transposition of Large Vessels and Spitzer's Theory of Its Pathogenesis. Gertrud Jensen.—p. 545.
Blood Formation and Copper Content of Chicken Embryo. S. Sümegi.—p. 565.

Significance of Spleen in Growth of Malignant Tumors.—Büngeler points out that recent investigations as well as his own animal experiments indicate that the spleen has an inhibiting influence on the growth of malignant tumors. Consideration of the great significance of the fermentation metabolism for the growth of malignant tumors suggests that the growth-inhibiting action of the spleen is due to a modification of the tumor metabolism. Experiments with various spleen extracts have shown that the spleen influences the metabolism of surviving sections of malignant tumors by increasing the respiration and by inhibiting fermentation. The active constituent of the spleen is water soluble, not bound to the proteins or lipoids; it is dialyzable, and it is not destroyed by heating to 100 C. The degree of modification of the tumor metabolism is directly dependent on the quantity of the extract that is added. Under the influence of spleen extract the type of metabolism of a malignant tumor changes so far as, after the addition of the extract, the already considerably reduced anaerobic formation of lactic acid disappears almost completely, provided the tests are made under aerobic conditions. The respiration-increasing and fermentation-inhibiting action of the spleen is also observable in sections from resting organ tissues but not to the same extent as in tumor tissues. This peculiar action is not entirely specific for the spleen, in that this action is also produced by extracts from other organs, such as from the lymph nodes, thymus, lungs, heart and testes, but in the spleen extracts the concentration of the substance is from four to five times greater.

Action of Roentgen Rays on Lungs and Heart of Animals.—It is pointed out by Karlin and Mogilnitzky that, considering the large number of patients who undergo roentgen irradiation on account of carcinoma of the mamma, pulmonary tumors or similar disorders, the possibility of pulmonary and cardiac injuries by roentgen rays gains in importance. Before describing their studies, they review the literature, which reveals that under the influence of roentgen rays there may develop more or less severe changes in the lungs and the heart. To examine the correctness of the observations of others, to gain insight into the development of the changes and to discover the technical causes of the changes, the authors made tests on young dogs and on rabbits. In the acute experiments, from 200 to 300 per cent of the unit skin dose was applied to each field, and necropsy was usually performed from one to eighteen days after the irradiation, whereas in the chronic cases it was performed from three and one-half to eight months after the treatment. The histologic studies revealed that when 200 per cent of the unit skin dose was applied to the field and the histologic examination was made after twenty-four hours (acute method), the lungs showed numerous perivascular hemorrhages, and destructive changes were noted in the lymphocytes of the peribronchial tissues. After seven days the same technic of treatment had resulted in severe pulmonary edema, bronchitis, partly of the hemorrhagic type, and catarrhal bronchopneumonia. Histologic examination of the lungs of dogs that were killed several months after the irradiation revealed no changes whatever in some instances. The acute vascular changes that develop following the application of 100 per cent of the unit skin dose per field evidently disappear again. When 200 per cent of the unit skin dose is applied in several sessions with intervals of six, eight or twelve months, necropsy reveals changes similar to those that are observed on human material, namely, thickening and adhesions of the pleura, brown indurations of the lungs and carnification of the lungs in the form of peribronchial, perivascular, interlobular and interstitial proliferation of the connective tissue with thickening of the alveolar walls and disappearance of the elastic fibers in the septums. Emphysema may also develop, and the changed pleura may infiltrate the pulmonary parenchyma and compress the lobuli. In regard to the cardiac changes, it is stated that in acute cases there exist perivascular hemorrhages; in chronic cases there are pericardial indurations, perivascular proliferations of the connective tissues with hyalinosis, atrophy of the muscle fibers and degeneration of the nerve fibers. The authors advise that the possibility of the development of various pulmonary and cardiac lesions should not be overlooked when roentgen treatment is resorted to in mammary or pulmonary tumors or in similar conditions.

Fatal Hemorrhages from Varices of Esophagus.—Nochimowski relates the histories of two patients in whom death was caused by a hemorrhage from ruptured esophageal varices. In both patients the liver was entirely normal, and a cause for the development of the varices could not be detected. It should be assumed that there was a congenital weakness of the wall which made it unequal to resist the pressure from within, especially during great bodily exertion. The author thinks that the presence of esophageal varices in the absence of cirrhosis of the liver and, on the other hand, the fact that only a certain percentage of patients with cirrhosis have varices indicate that even in cirrhosis of the liver varices develop only, at least in their more severe form, when weakness of the vascular wall was previously present.

Klinische Wochenschrift, Berlin

11: 1489-1528 (Sept. 3) 1932

Investigations on Anatomic Conditions in Psychiatry. W. Scholz.—p. 1489.
Spontaneous Hypoglycemia: Clinical and Pathologic Aspects. F. Bielschowsky.—p. 1492.
Insular Cell Adenoma of Pancreas with Hypoglycemia in Diabetes. F. Büchner.—p. 1494.
Coprohematology: Clinical Significance of Porphyrins for Pathology of Digestion. I. Boas.—p. 1496.
*Acute Dilatation of Heart in Coronary Spasm. M. Goldenberg and E. Zdansky.—p. 1498.
*Carbon Rest in Blood of Patients with Circulatory Disorders. F. Kisch.—p. 1500.
Influence of Vitamins on Peroxidase Content of Blood. H. J. Jusatz.—p. 1501.
Newly Discovered Laws of Sense of Taste. H. Hahn.—p. 1504.
Physical Aspects of Heat Economy of Human Beings. K. Büttner.—p. 1508.
Fundamental Law of Energy Exchange in Biology. H. Pfleiderer.—p. 1510.
Idem. H. Bohnenkamp.—p. 1510.

Acute Dilatation of Heart in Coronary Spasm.—Following the injection of the pressor principle of the posterior lobe of the hypophysis into dogs, Goldenberg and Zdansky noted in serial roentgenograms a great enlargement of the heart. In numerous experiments on dogs, in which the femoral blood pressure was registered simultaneously with the electrocardiogram, the time of ischemia of the cardiac muscle, that

is, the time of the coronary spasm, could be determined. As early as one and one-half minutes after the injection the blood pressure is decreased and the peripheral pulse is no longer perceptible. At the same time there is a considerable enlargement of the cardiac shadow, and there are indications that the enlargement is mostly on the right side of the heart. An outward displacement of the shadow of the superior vena cava becomes noticeable, which indicates stasis of the blood in the vena cava. The pulmonary fields always remain light in the roentgenogram. The effect of the injection reaches its height two minutes after the injection. At this time the dilatation of the heart is still more pronounced. The orthodiagraphic diameter has increased from 5.5 to 7.1 cm., and the shadow of the heart is almost spherical. All changes indicate that especially the right side of the heart is enlarged. There are no signs indicating an overfilling in the lesser circulation. The authors assume, although with a certain reservation because they are not absolutely positive, that the left auricle has not noticeably increased in size, since the left ventricle likewise does not noticeably enlarge; thus, the enlargement of the cardiac shadow seems to be primarily due to a dilatation of the right side of the heart. Later on, during the stage of increased pressure, the size of the shadow decreases again, but in some instances the orthodiagraphic diameter is still 5.9 cm. (compared to 5.5 cm. before the injection) twenty minutes after the injection. In their conclusion the authors emphasize once more that roentgenologic signs of an excessive amount of blood in the lesser circulation are constantly absent or so slight that they are not demonstrable. In none of the experiments was pulmonary edema noted, for the coronary spasm leads within a few minutes to an insufficiency of the entire heart, and by this to stasis of the blood before it enters the lung, namely, in the right side of the heart.

Carbon Rest in Blood in Circulatory Disorders.—According to Kisch, the normal value of the carbon rest (carbon of the deproteinized blood) is between 160 and 180 mg. per hundred cubic centimeters. However, in patients with diabetes and in those with uremia the carbon rest is much higher. In these patients, as well as in those with avitaminosis, chronic arthritis and icterus, there is an increased elimination of carbon-containing bodies in the urine, which becomes manifest in an increase of the carbon-nitrogen quotient of the urine to over 1. Normally, this quotient is between 0.7 and 0.95. The author studied the behavior of the carbon rest in nondropsical and in dropsical patients with circulatory disorders before and in the course of cardiac and diuretic therapy, and also the relations between the carbon rest and the total carbon content of the urine, the carbon-nitrogen quotient and the vakat oxygen (the amount of oxygen necessary to oxidize the urine after the subtraction of chlorinated oxygen from the original total amount) in the urine. He found that in patients with cardiac and in those with circulatory disorders the carbon rest of the blood is much above the normal. In patients with severe cardiac dropsy and engorged livers, the carbon rest of the blood reaches extraordinarily high values (highest, 426 mg. per hundred cubic centimeters). In nondropsical patients with circulatory disorders large amounts of carbon are eliminated with the urine. Dropsical patients with circulatory disorders eliminate only small amounts of carbon in the urine; however, in spite of this the carbon-nitrogen quotient of the urine is above 1; the vakat oxygen of the urine is usually below normal. If the cardiac and diuretic treatments are successful, the carbon rest of the blood of the patients with circulatory disorders decreases, but it does not reach normal values. As the diuresis improves, the total carbon content of the urine increases, sometimes far above the normal; formerly low vakat oxygen values increase, sometimes far above normal. During successful mercury diuresis the formerly increased carbon rest of the blood decreases considerably but does not reach the normal level; in such cases, the carbon elimination with the urine reaches exceptionally high values, the carbon-nitrogen quotient of the urine increases still more, and the vakat oxygen of the urine may become extremely high. In patients in whom the circulation becomes more impaired, the carbon rest of the blood increases. These observations indicate clearly the significance of the carbon bodies in the intermediate metabolism in patients with circulatory disorders.

Wiener klinische Wochenschrift, Vienna

45: 1053-1076 (Aug. 26) 1932

*Significance of Abnormal Nutritional Conditions for Growth of Malignant Tumors. E. Freund.—p. 1053.
Radium Therapy of Internal Diseases. F. Högler.—p. 1058.
*Egg Therapy of Pernicious Anemia. K. Singer.—p. 1063.
Diagnosis and Therapy of Gonorrheal Vulvovaginitis in Infants. A. Fessler.—p. 1064.
*Trigeminocardiopulmonary Reflex and Its Significance in Pulmonary Tuberculosis. P. Caryophillis.—p. 1067.
Vaccine Treatment of Warts and of Pointed Condyloma. R. O. Stein. —p. 1068.

Abnormal Nutritional Conditions for Growth of Tumors.—Freund advances evidence that a certain change in the intestinal flora, more particularly in the coli bacteria, is an important factor in the pathogenesis of cancer, and he thinks that the preservation or the reestablishment of normal conditions is of great importance. For this purpose he considers it advisable to attempt to destroy the diseased coli bacteria either by direct disinfection or by changing the intestinal condition so that development and existence of diseased coli bacteria becomes impossible. The diet must be arranged so that it does not produce acid fermentation that leads to changes in the coli bacteria. The diet should not contain animal fats. An attempt could be made to introduce normal coli bacteria into the intestine, or normal coli acid could be introduced, if it should become possible to produce it in sufficient quantities. Active or passive immunization of patients could be attempted by introducing either the weakened pathologic bacteria or specific carcinomatous protein compounds.

Egg Therapy of Pernicious Anemia.—Singer first stresses the significance of the Castle principle in the gastric juice for the treatment of pernicious anemia and then relates his experiences with the egg therapy of pernicious anemia. His technic is as follows: From eight to ten raw eggs, the protein content of which is equal to about 250 Gm. of meat, are mixed with from 100 to 200 cc. of gastric juice obtained from healthy persons, and this mixture is put into the incubator for about one hour. The eggs thus prepared are given throughout the day in several small portions. The patient's diet is entirely free from meat. The author employed this egg therapy in three cases and the results obtained indicate that the egg therapy in this form provides the substance that is effective against pernicious anemia. In the last part of his article the author admits that the egg therapy of pernicious anemia will probably never be practical, since the eggs are effective only after being influenced by the Castle ferment. He thinks that the active substance is probably present in all forms of animal protein and he mentions the various forms in which it has been discovered thus far. He concludes that it is the function of the Castle principle in the gastric juice to liberate from the foods the substance necessary for erythropoiesis.

Trigeminocardiopulmonary Reflex in Pulmonary Tuberculosis.—In the course of studies on reflexes, Caryophillis gave particular attention to those of the trigeminus. He observed that heat represents a reflexogenic stimulant, and by filling two elastic bladders with water at 43 C. and applying one to each cheek for from one-half to two and one-half minutes, he observed that the frequency of the pulse as well as the arterial pressure change constantly. In making tests on patients he discovered a relationship between the outcome of this trigeminocardiopulmonary reflex and certain clinical symptoms. He further calls attention to the fact that patients with pulmonary tuberculosis frequently have red cheeks, a condition that is due to circumscribed vasodilatation. Various explanations have been given for this symptom, for instance that it is due to a stimulation of the rami communicantes, which in turn is caused either by an exudative pleurisy, by apical tuberculosis with pleural symphysis, or by a mediastinitis with apical sclerosis. The author is of the opinion, however, that this neurosympathetic symptom, at least in the majority of cases, is not due to a direct irritation of the centrifugal branches of the sympathetic nervous system but rather to a reflex irritation by the diseased lung. He assumes that the centripetal terminations of the pulmonary nerves are irritated by the tuberculous process and that this irritation reflexively influences the sympathetic nerves of the homolateral half of the face. Of 150 patients with unilateral ulcerocaseous pulmonary tuberculosis, 85 per cent gave a vago-

tonic reaction (reduction of pulse frequency and of arterial pressure), 7 per cent gave a sympathicotonic reaction, and in 8 per cent it was neutral. About the local result of the test the author states that in the majority of cases the side of the face homolateral to the diseased lung showed a more intense reaction than the other side. In patients with bilateral pulmonary lesions, the vasodilatation was usually more intense on the side on which the tuberculous process was most severe. The author considers the test of great diagnostic value for the practitioner not only in regard to the tonus of the sympathetic nervous system but especially because it aids in the localization of the pulmonary process.

Zeitschrift für Kinderheilkunde, Berlin

53: 309-454 (Aug. 19) 1932

*Transverse Shadows on Roentgen Pictures of Long Bones in Children. M. de Bruin.—p. 309.
Acute Nutritional Disturbances in Nurslings and Infection of Middle Ear and of Mastoid Process. A. S. Sokolow and Straschnikowa.—p. 321.
Physiology of Puberty: Elimination of Hormone A of Anterior Lobe of Hypophysis in Urine. Gertrud Soeken.—p. 339.
Rearing of Premature Births in Children's Hospitals. Käte Freund.—p. 345.
Antibody Formation in Nurslings. F. Goebel.—p. 358.
Hypertension and Hypotension During Childhood. L. Doxiades.—p. 366.
Sepsis During Nursling Age and Its Treatment with Human Serum. A. A. Tagunoff and M. M. Zimbal.—p. 386.
Immunochemical Analysis of Egg-White Sensitivity in Infantile Eczema. E. Bosch, P. György and E. Witebsky.—p. 394.
Diagnostic and Therapeutic Indications for Encephalography. T. Gött.—p. 411.
Tetanigenous Substances in Thymus and Urine. H. M. Schumacher.—p. 419.
Mongolism and Other Congenital Defects in Their Relation to Advanced Age of Mothers. C. Bennholdt-Thomsen.—p. 427.

Transverse Shadows on Roentgen Pictures of Long Bones in Children.—In roentgenograms of the long bones of a large number of normal children, aged between 1 and 14, de Bruin observed transverse stripes on the ends of the diaphyses. He gives a detailed description of these lines and discusses the differential diagnosis from other transverse shadows. The stripes represent anatomic changes that are the result of growth inhibition. The cause of this inhibition is a disease or a starvation period through which the child has passed. On the basis of this, the transverse lines are designated as growth stripes, or, more correctly, as growth standstill stripes.

Zeitschrift für klinische Medizin, Berlin

121: 515-760 (Aug. 24) 1932

*Round Tuberculous Foci in Lungs. H. Straub.—p. 515.
Multiple Myelomas: Clinical Aspects and Pathology. A. Magnus-Levy.—p. 533.
Anatomic and Physiologic Studies on Sympathetic Regulation. F. Krause.—p. 563.
Functional Diagnosis of Vessels: Effective Blood Pressure. J. Plesch.—p. 628.
Functional Diagnosis of Vessels Necessary for Prognosis of Heart. J. Plesch.—p. 640.
Thrombosis and Embolism. K. Damblé.—p. 663.
*Influence of Irradiation of Ovaries on Organic Heart Disease. J. Borak.—p. 678.
Pancreas and Hepatobiliary System in Pathogenesis of Pernicious Anemia. J. Neuburger.—p. 688.
Gout and Leukemia. H. Brunner.—p. 700.
Urea Content of Blood in Diabetic Coma. A. P. Daniels and J. F. Touw.—p. 711.
Clubbed Fingers on One Hand. L. Loucaides.—p. 724.
Blood Protein Picture and Blood Sugar Curve. M. Taubenhaus and R. Steinig.—p. 730.
Body Structure and Basal Metabolism. W. Borgard.—p. 737.
Arsphenamine and Assimilation of Galactose. O. Satke and K. Thums.—p. 748.

Round Tuberculous Foci in Lungs.—On the basis of reports in the literature and of his own observations, Straub calls attention to a form of pulmonary tuberculosis that so far has hardly been given consideration, namely, the round tuberculous foci of the lungs. The foci are homogeneous, sharply defined and round, the size of a coin, and they occur either isolated or in large numbers in entirely reactionless surroundings. The foci take an unusually torpid course. They may remain entirely stationary for years, even when in addition to them there develops in the lungs a progressive or even a fatal tuberculosis. However, the prognosis of the foci is not entirely favorable, for they may become progressive after a long time and may break down and form caverns. The foci do not represent the first extensive tuberculous infection, since in addition to them there also are remnants of old disseminations or of old cirrhotic processes. Considered from the pathologico-anatomic point of view, they are caseous calcareous foci with a connective tissue capsule. The round foci are considered a rare, further development of focal exudative inflammations, which are isolated by connective tissue growing around them. The author thinks that all focal exudative forms are capable of becoming transformed in this manner, especially early infiltrates, and also perifocal inflammations around older foci, hematogenic reinfections (late infiltrates) and secondary infiltrates. Because of the slight response to external influences treatment is useless, but since the foci present a constant danger, they require regular control.

Influence of Irradiation of Ovaries on Heart Diseases.—Borak believes that in defects of the cardiac valves that are decompensated by hemorrhagic anemia of utero-ovarian origin, irradiation of the ovaries is an etiologic, therapeutic procedure and, in such cases, is superior to all cardiants.

Zeitschrift für Tuberkulose, Leipzig

65: 257-336 (Sept.) 1932

*Occupational Therapy in "Surgical" Tuberculosis. A. Rollier.—p. 257.
Occupational Therapy in Sanatoriums for Tuberculous Patients. H. Alexander.—p. 264.
Seven Years of Occupational Therapy. H. Voûte.—p. 268.
*Immunity and Allergy in Tuberculosis. F. Klopstock.—p. 275.
Collapse Therapy of Cavernous Pulmonary Tuberculosis in Congenital Cardiac Defects (Pulmonary Stenosis). H.-U. Ritschel.—p. 285.
Symptomatology of Premiliary Stage of Tuberculosis in Children. H. Langer.—p. 293.
New Medicaments and Nutritional Substances in Treatment of Tuberculosis. G. Schröder.—p. 298.

Occupational Therapy in "Surgical" Tuberculosis.—Rollier points out that the thought of giving work to bedfast patients, namely, to those with tuberculosis of the spinal column, of the hip or of the upper extremities, appears at first paradoxical, since these forms of "surgical" tuberculosis require immobilization. However, it will become understandable when it is considered to what extent former opinions about the treatment of surgical tuberculosis have been modified by general heliotherapy, for it is the latter that makes occupational therapy possible. For patients in whom heliotherapy has improved the general condition and has developed the muscles, regular work is helpful. The author shows photographs of patients, who, while comfortably bedded in open solariums, are busy making or inspecting induction coils, parts of watches or other small objects. Individualized and carefully controlled occupational therapy, together with heliotherapy, is valuable in three respects: physically, psychically and economically. The physical advantages are that it has a favorable influence on the circulation; it regulates the body heat, and it stimulates metabolism. The psychic influence is especially valuable, in that the working patient no longer feels useless, and thus he regains an interest in life. The fact that with the payment he receives for his work he can repay at least a part of the costs of his treatment has a psychic as well as an economic value.

Immunity and Allergy in Tuberculosis.—Klopstock states that animal experiments made to determine the influence of the primary infection on reinfection or superinfection give an idea of the rôle of immunity and allergy in tuberculosis. However, only observations on human beings are decisive for the estimation of the course of human tuberculosis. The high incidence of tuberculin sensitivity without tuberculosis, the frequent observation of tuberculous scars in necropsies and the possibility of a permanent cure of tuberculous patients indicate not only that in human beings there exists a congenital resistance against the tubercle bacillus, but also that by tuberculosis a considerable degree of immunity can be acquired. The course of the primary infection is determined by the congenital resistance and the defense readiness against infections. The course of reinfection and of superinfection is determined by the degree of acquired immunity. The allergy toward tuberculin and substances from tubercle bacilli is an attendant phenomenon of the immunity condition. There is no form of allergy that is a measure for the degree of immunity.

Zeitschrift für urologische Chirurgie, Berlin

35: 169-304 (Aug. 25) 1932. Partial Index

*Reflex Effect on Upper Urinary Tract and Its Meaning in Urography. F. Fuchs.—p. 169.
So-Called Fat Replacement of Kidney: Case. A. Gridnev.—p. 180.
Horse-Shoe Kidney with Pyonephrosis. P. L. Mirizzi.—p. 189.
New Roentgenologic Method for Demonstrating Interior of Urinary Bladder. T. Bársony and E. Koppenstein.—p. 194.
Diseases of Urachus. A. I. Wassiljew.—p. 199.
Infection of Urinary Passages with Trichomona Vaginalis. F. May. —p. 213.
Diagnosis of Bladder Papilloma Through Examination of Urinary Sediment with Alizarin Method. A. Bauer.—p. 219.
*Polycystic Kidney. A. Noszkay.—p. 238.
*Urinary Bladder Carcinoma and Present Status of Its Treatment. R. Chwalla.—p. 251.

Reflex Effect on Upper Urinary Tract and Its Meaning in Urography.—Fuchs states that under ordinary circumstances the ureter is empty and collapsed, and that only small quantities of urine are ejected at a time into the bladder. The ability to obtain complete pictures after intravenous injections of iopax or of the sodium salt of mono-iodomethane-sulphonic acid depends on the diuretic properties of these drugs. As a result of diuresis, the renal pelvis and the ureter become dilated with urine. The author demonstrated in animal experiments that these functional changes of the upper urinary tract are of a reflex character. When he emptied the bladder of a rabbit or a cat, peristaltic waves were observed in the exposed ureter. Filling of the bladder resulted in cessation of the peristaltic waves. Short retrograde peristaltic waves were likewise observed. In human beings satisfactory pictures were obtained with urography when the bladder was filled, and incomplete ones when the bladder was emptied. Fuchs concludes that constriction and dilatation of the ureter are reflex phenomena. Inability to contract is pathognomonic of infection and of stasis in the upper passages. Dilatation of the upper passages is the pathogenic index of urethral and prostatic obstruction. This, in all probability, is likewise true of the so-called atonic dilatation. The inability to contract and dilate may be utilized as an index to therapeutic progress.

Polycystic Kidney.—Noszkay states that the question as to whether the polycystic kidney is a developmental defect or a neoplasm has not been decided. The hereditary character, bilaterality and the simultaneous existence of cystic lesions in other organs suggest that the condition is the result of a developmental disturbance. Polycystic disease of the kidney is a progressive lesion leading to a complete loss of renal function and to uremia. The absence of characteristic symptoms makes the diagnosis of early cases, especially if still unilateral, rather difficult. They are confused with nephritides and with renal neoplasms. Bilateral pyelography demonstrates, as a rule, the presence of a characteristic deformity. The treatment should be conservative so far as possible, and should have for its aim the sparing of renal function. Operative intervention cannot retard the progress of the disease. Symptomatic treatment brings about longer or shorter periods of improvement. Hematuria, as well as the size of the tumor, may be influenced and renal function raised. In this connection ignipuncture, recommended by Payr, is of considerable value. Removal of a polycystic kidney is justified only when the other kidney has a normal function and uremia is not likely to supervene. Uncontrollable hemorrhage and sepsis are indications for surgery.

Treatment of Urinary Bladder Carcinoma.—Chwalla is of the opinion that all carcinomas of the bladder with the exception of those involving the base or the neck, are best treated by bladder resection. While not brilliant, the results obtained by this method are superior to those obtained by other methods. He has obtained an eight year cure in 40 per cent of his patients. He prefers to leave the cancer involving the base or the neck entirely alone, or, at best, to treat it symptomatically. When urinary obstruction develops in such cases, it is treated by establishing a suprapubic bladder fistula. The operation of total extirpation of the bladder and its adnexa, as advocated by Fedoroff and by Beer, appears too formidable. The author is not convinced that the immediate or remote results after it are better than those following resection. It appears that better results will be obtained only through earlier recognition and operation. These things could be brought about if in every case of hematuria or of urinary disturbance the patients were cystoscoped and otherwise urologically investigated.

Sovetskiy Vestnik Venerologii i Dermatologii, Moscow

1: 23-71 (number 6) 1932

Incidence of Professional Dermatitis in Coal-Tar Industry. E. I. Ioffe. —p. 33.
Critical Aspect of Complications Incident to Treatment with Neoarsphenamine. A. P. Feldman and N. M. Laikhter.—p. 37.
Stability of Neoarsphenamine. V. N. Zilberman, M. M. Arievich and S. A. Potapov.—p. 45.
Respective Value of Blood Picture and Morphology of Urethral Pus in Study of Gonorrhea in Male. A. Kartamishev and A. Degtyar.—p. 52.
*Diagnostic Value of Intradermal Injections of Live and Killed Cultures of Gonococcus. E. M. Levin and M. I. Fink.—p. 55.
Practical Value of Kahn Test in Diagnosis of Latent Forms of Syphilis. O. V. Vinogradov.—p. 60.

Intradermal Injections of Cultures of Gonococcus.—In order to find concrete data for the determination of the opsonic index in the specific vaccinal therapy of gonorrhea, Levin and Fink performed experiments on patients and normal men. They used fresh vaccine as well as fresh cultures of gonococcus. The potency of the local reaction was determined by the diameter of the erythema and infiltration. Observations on the effect of the intradermal injection of 0.2 cc. of vaccine during a twenty-four hour reaction were made every two hours. The experiment proved that intradermal injections of live and killed cultures of gonococcus have no diagnostic meaning and do not produce any specific allergy for the gonococcus. The effect of the quantity of the bacteria injected, as well as the time of the beginning of the reaction, in patients with gonorrhea is exactly the same as that in normal men.

Bibliotek for Læger, Copenhagen

124: 267-309 (Aug.) 1932

*Arterial Reflexes. J. Ipsen.—p. 267.

Arterial Reflexes.—Ipsen's investigations were carried out mainly through measurements of the skin temperature. He emphasizes that arterial contractions may occur independently of the nervous system, partly through the circulation and partly through the environment. He treats of a number of reflexes of the cutaneous arteries, chiefly cold reflexes, showing that a weaker and a stronger chilling produces different reactions. Examinations of the reflex tracts after severance of the nerves disclose that arterial spasms can be explained by the loss of a superior dilating action. In arteriospasms in poliomyelitis there is a similar absence of the distending action, because of the pathologico-anatomic changes in the nerves dependent on the nucleus lateralis sympatheticus in the spinal cord. Posttraumatic reflexes, the significance of the intervention of the cerebral centers and arterial reflexes during anesthesia are also discussed.

Hygiea, Stockholm

94: 609-672 (Aug. 31) 1932

Influence of Place of Residence and Working Conditions on Course of Chronic Rheumatic Infectious Arthritis. G. Edström.—p. 609.

Ugeskrift for Laeger, Copenhagen

94: 853-868 (Sept. 1) 1932

Clinic and Therapy of Tuberculosis of Larynx. S. F. Nielsen.—p. 853.
*Investigations on Occurrence of Liver Lipases and Pancreas Lipases in Blood from Patients with Pneumonia. K. Germer.—p. 857.
Treatment of Measles at Court of Louis XIV. H. Forchhammer.—p. 865.

Liver and Pancreas Lipases in Blood of Patients with Pneumonia.—Germer reports that blood tests on eight patients with croupous pneumonia, twenty-three with bronchopneumonia and five with pulmonary tuberculosis were made for quinine and atoxyl resistant lipase, with a determination of the icterus index in every case. An increase in quinine-resistant lipase was found in 47 per cent of the cases. He states that in grave cases of pneumonia there is usually a secondary toxic hepatitis. While a positive liver lipase reaction is, as a rule, accompanied by an increased jaundice reaction, the two reactions are not absolutely parallel. In 16.5 per cent of the cases there was an increase in the pancreatic lipase in the blood. There is a marked relation between the patient's general condition and the content of pancreatic lipase in the blood. In the four fatal cases in his material histologic examination of the liver and pancreas revealed a close agreement between the amount of liver and pancreas lipases in the blood and the pathologico-anatomic changes in the liver and pancreas.